MANUAL TRAINING IN THE GRADES

FRANK HALSTEAD

D. C. HEATH AND COMPANY

Class [illegible]

Book [illegible]

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Manual Training in the Grades

BY

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INTRODUCTORY NOTE

The following courses in Manual Training for the 5th, 6th, 7th and 8th grades were prepared after eight years of careful study, during which time the author visited over 250 cities and towns in the New England States, New York and New Jersey.

The courses are arranged progressively and presented in as clear and simple a way as possible, — the drawings themselves being self-explanatory.

For the many teachers who are obliged to follow a required course, but who are allowed to introduce supplementary or optional models, as well as for those instructors who have more liberty and who are able to make such changes as they see fit, these courses will be found readily adaptable to any schedule already in use.

The instructor's outlines have been included, as the author has found it most advantageous to give his assistants an outline to work by.

The author has provided four different models for each progressive step in the courses — that is, four models which illustrate the different tools under each principle, thus giving the pupil a wider choice where desirable, and the instructor who has to teach the same grade of pupils during an entire year most practical assistance.

FRANK HALSTEAD.

East Orange, N. J., September, 1913.

MANUAL TRAINING IN THE GRADES

GENERAL OUTLINE OF WORK

FIFTH GRADE

FIRST WEEK — MODEL NO. 1.

THEORY (*ten minutes*).

1. Object of hand work in wood.
2. Tools used in making first exercise.
3. Measuring, the use of the rule, knife, and pencil.
4. Use of the try-square.

PRACTICE.

Sawing out stock.

NOTE: Draw outline on both surfaces.

SECOND WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

1. Tools.
   (*a*) Smoothing plane.
   (*b*) Block plane.
   (*c*) Marking gauge.
   (*d*) Backsaw.
   (*e*) Bit and bit brace.
2. Use of compass and dividers.

PRACTICE.

1. Planing a square edge of wood.
2. Use of carpenters' marks.
3. Drawing, gauging, and planing stock to dimensions.

THIRD WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Use of coping saw.

PRACTICE.

1. Draw outline, using compass.
2. Using coping saw, cut to line.

FOURTH WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

1. Discussion of grain of wood.
2. Cutting with and across grain.

PRACTICE.

1. Finish sawing wood.
2. Cut to line with knife.

FIFTH WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

1. Methods of securing and getting out lumber.
2. Sandpaper; its uses and abuses.

PRACTICE.

1. Sandpaper stock, with or without the use of a sandpaper block.
2. Finish model.
   Glue on sandpaper.

SIXTH WEEK — MODEL NO. 2.

THEORY (*ten minutes*).

1. Discussion of wood.
   Bass wood. Linden tree.
2. Discussion of the ripsaw.

PRACTICE.

Saw stock, using carpenter's square.

SEVENTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Discussion of wood.
White wood, tulip tree.

PRACTICE.

Plane model square and true to dimensions.

EIGHTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Discussion of saws.
Crosscut saw.

PRACTICE.

1. Draw outline of model
2. Saw with back- and ripsaw to gauge and knife line.

NINTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Short discussion of stains and shellacs.

PRACTICE.

1. Finish model.
2. Sandpaper and shellac.

TENTH WEEK — MODEL NO. 3.

THEORY (*ten minutes*).

Discussion of woods.
Pines, white, etc.

PRACTICE.

Saw out stock.

ELEVENTH WEEK — MODEL NO. 3, (*continued*).

THEORY (*ten minutes*).

1. Discussion of planes, smoothing and jack.
2. Woods. White oak.

PRACTICE.

Square stock to dimensions.

TWELFTH WEEK — MODEL NO. 3, (*continued*).

THEORY (*ten minutes*).

Discussion of drills and countersinks.

PRACTICE.

1. Lay out and mark center lines for holes.
2. Drill holes and countersink.
3. Draw lines for chamfer, using finger-gauge.

THIRTEENTH WEEK — MODEL NO. 3, (*continued*).

THEORY (*ten minutes*).

Discussion of planes.
Block.

PRACTICE.

1. Chamfer edges.
2. Plane and sandpaper model.

FOURTEENTH WEEK — MODEL NO. 4.

THEORY (*ten minutes*).

Discussion of woods.
Hard and soft.

PRACTICE.

1. Saw out stock.
2. Plane to dimensions.

FIFTEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.
Mahogany.

PRACTICE.

1. Draw design, using compass.
2. Cut to line with knife.
3. Whittle edges of blade.

SIXTEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Structure of wood.
Products.

PRACTICE.

1. Sandpaper model.
2. Stain and finish.

SEVENTEENTH WEEK — MODEL NO. 5.

THEORY (*ten minutes*).

Structure of wood.

PRACTICE.

Saw out stock.

EIGHTEENTH WEEK — MODEL NO. 5, (*continued*).

THEORY (*ten minutes*).

Structure of wood.
Pith.

PRACTICE.

Plane model square and true to dimensions.

NINETEENTH WEEK — MODEL NO. 5, (*continued*).

THEORY (*ten minutes*).

1. Structure of wood.
   Layer of wood.
2. Use of miter box.

PRACTICE.

1. Draw outline of model.
2. Cut edges.

TWENTIETH WEEK — MODEL NO. 5, (*continued*).

THEORY (*ten minutes*).

1. Structure of wood.
   Bark.
2. Use of auger bit.

PRACTICE.

File curved corners.

TWENTY-FIRST WEEK — MODEL NO. 5, (*continued*).

THEORY (*ten minutes*).

Structure of wood.
Annual rings.

PRACTICE.

1. Lay out center lines.
2. Bore holes.

TWENTY-SECOND WEEK — MODEL NO. 5, (*continued*).

THEORY (*ten minutes*).

Structure of wood.
Sap wood.

PRACTICE.

Sandpaper and finish model.

TWENTY-THIRD WEEK — MODEL NO. 6.

THEORY (*ten minutes*).

Structure of wood.
Heart wood.

PRACTICE.

1. Plane stock square and true to dimensions.
2. Sandpaper same.

TWENTY-FOURTH WEEK — MODEL NO. 6, (*continued*).

THEORY (*ten minutes*).

1. Structure of wood.
   Medullary rays.
2. Use of gouge.

PRACTICE.

1. Chamfer edges of wood.
2. Gouge out hole for wax.

TWENTY-FIFTH WEEK — MODEL NO. 6, (*continued*).

THEORY (*ten minutes.*)

Food for trees.

PRACTICE.

1. Sandpaper model.
2. Shellac model.
3. Glue on asbestos and emery cloth.

TWENTY-SIXTH WEEK — MODEL NO. 7.

THEORY (*ten minutes*).

Density of wood.

PRACTICE.

Plane stock square and true to dimensions, using jack plane and spokeshave.

TWENTY-SEVENTH WEEK — MODEL NO. 7, (*continued*).

THEORY (*ten minutes*).

Growth of wood.

PRACTICE.

1. Draw ellipse on both surfaces.
2. Using turning saw, saw outside of line.

TWENTY-EIGHTH WEEK — MODEL NO. 7, (*continued*).

THEORY (*ten minutes*).

1. Cutting of wood.
2. Use of spokeshave.

PRACTICE.

1. Cut to line with spokeshave.
2. Nail stock together.
3. Round edges with spokeshave.

TWENTY-NINTH WEEK — MODEL NO. 7, (*continued*).

THEORY (*ten minutes*).

1. Moisture in wood.
2. Air drying.
3. Kiln drying.

PRACTICE.

Sandpaper and finish model.

THIRTIETH WEEK — MODEL NO. 8.

THEORY (*ten minutes*).

Shrinkage in wood.

PRACTICE.

Plane stock square and true to dimensions.

THIRTY-FIRST WEEK — MODEL NO. 8, (*continued*).

THEORY

Use of brads.

PRACTICE.

1. Finish planing slats.
2. Draw outline of two legs, using knife and marking gauge.
3. Saw and cut to line with chisel.

THIRTY-SECOND WEEK — MODEL NO. 8, (*continued*).

THEORY.

Sizes of brads.

PRACTICE.

1. Sandpaper wood.
2. Nail slats and legs together.
3. Stain and finish.

THIRTY-THIRD WEEK — MODEL NO. 9.

PRACTICE.

Saw out stock.

THIRTY-FOURTH WEEK — MODEL NO. 9, (*continued*).

PRACTICE.

Plane pieces to dimensions.

THIRTY-FIFTH WEEK — MODEL NO. 9, (*continued*).

PRACTICE.

1. Saw bevel on back, round edge and smooth, using plane and spokeshave.
2. Cut bevel on sides.
3. Bevel front, and nail pieces together.

SIXTH GRADE

FIRST WEEK — MODEL NO. 1

THEORY (*ten minutes*).

Uses of bench hook.

Why glued together.

PRACTICE.

Saw out stock for model.

SECOND WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.

Birches; sweet birch.

PRACTICE.

1. Square stock, plane two large pieces to dimensions.
2. Bore holes for use of screws.

In base piece and rest (upper and lower).

THIRD WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.
Birches; red birch.

PRACTICE.

1. Finish planing larger pieces for base.
2. Glue together, using hand clamps.

FOURTH WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.
Birches; white birch.

PRACTICE.

1. Plane and square two small pieces to dimensions.
2. Lay out center lines for screws.

FIFTH WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.
Pine; white.

PRACTICE.

1. Drill holes for screws.
2. Countersink same.
3. Screw on upper and lower arms.

SIXTH WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.
Pine; red.

PRACTICE.

1. Bore hole for hanging purposes.
2. Chamfer outside ends.
3. Sandpaper model.

SEVENTH WEEK — MODEL NO. 1, (*continued.*)

THEORY (*ten minutes*).

Discussion of woods.
Pines.

PRACTICE

1. Finish sandpapering model.
2. Shellac model.

EIGHTH WEEK — MODEL NO. 2.

THEORY (*ten minutes*).

Discussion of woods.
Gum; sweet.

PRACTICE.

1. Saw out stock and plane square to dimensions.
2. Draw outline of plan view.

NINTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.
Gum; sour.

PRACTICE.

Saw outside at line using turning saw.

TENTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Discussion of woods.
Sycamore.

PRACTICE.

1. Cut with spokeshave to line.
2. Draw outline at front elevation.

ELEVENTH WEEK — MODEL NO. 2, (*continued*).

PRACTICE.

1. Saw outside of line, using turning saw.
2. Cut to line, using spokeshave.

TWELFTH WEEK — MODEL NO. 2, (*continued*).

PRACTICE.

1. Round edges, using spokeshave.
2. Sandpaper model.
3. Screw in hook.
4. Shellac.

THIRTEENTH WEEK — MODEL NO. 3.

PRACTICE.

Plane stock square and true to dimensions.

FOURTEENTH WEEK — MODEL NO. 3, (*continued*).

PRACTICE.

1. Draw outline, using knife and gauge lines for corners.
2. Saw out corners, using backsaw.
3. Cut with chisel.
4. File to lines.

FIFTEENTH WEEK — MODEL NO. 3, (*continued*).

PRACTICE.

1. Bore hole with expansion bit.
2. Smooth model, using plane, file, and sandpaper.

SIXTEENTH WEEK — MODEL NO. 4.

PRACTICE.

1. Saw out stock.
2. Plane stock for sides square and true to dimensions.

SEVENTEENTH WEEK — MODEL NO. 4, (*continued*).

PRACTICE.

1. Plane stock for ends square and true to dimensions.
2. Draw outline of handle.

EIGHTEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Rotten stone.
How obtained, used, etc.

PRACTICE.

1. Cut handle to dimensions.
2. Sandpaper sides, ends, and handle.
3. Nail together.

NINETEENTH WEEK — MODEL NO. 4, (*continued*).

PRACTICE.

1. Fit bottom to box.
2. Nail on sides. Shellac and polish same.
3. Set nails with nail set.

'WENTIETH WEEK — MODEL NO. 4, (*continued*).

PRACTICE.

1. Sandpaper model.
2. Stain, shellac and polish.

'WENTY-FIRST WEEK — MODEL NO. 5.

PRACTICE.

1. Saw out stock for model.
2. Plane stock square and true to dimensions.

'WENTY-SECOND WEEK — MODEL NO. 5, (*continued*).

THEORY (*ten minutes*).

Dowel joints.

PRACTICE.

1. Joint stock.
2. Fit together, using dowels.

'WENTY-THIRD WEEK — MODEL NO. 5, (*continued*).

PRACTICE.

1. Finish jointing stock.
2. Glue together, using iron clamps.

'WENTY-FOURTH WEEK — MODEL NO. 5, (*continued*).

PRACTICE.

1. Draw curves cut to outside of line.
2. Cut to line using spokeshave.
3. Round edges.
4. Sandpaper.

'WENTY-FIFTH WEEK — MODEL NO. 6.

PRACTICE.

Saw out stock for model.

TWENTY-SIXTH WEEK — MODEL NO. 6, (*continued*):

PRACTICE.

Plane stock square and true to dimensions.

TWENTY-SEVENTH WEEK — MODEL NO. 6, (*continued*).

PRACTICE.

1. Plane stock for roller.
   (*a*) Plane stock square.
   (*b*) Plane stock octagonal.
   (*c*) Plane off edges.
2. Scrape and sandpaper.

TWENTY-EIGHTH WEEK — MODEL NO. 6, (*continued*).

PRACTICE.

1. Draw outline for ends.
2. Cut outside of lines.
3. Cut slit in arms.

TWENTY-NINTH WEEK — MODEL NO. 6, (*continued*).

PRACTICE.

1. Cut ends in roller to fit slit in arms.
2. Drill all holes.

THIRTIETH WEEK — MODEL NO. 6, (*continued*).

PRACTICE.

1. Screw together.
2. Sandpaper.
3. Stain.
4. Varnish.

The remainder of the time may be used for unfinished work, or for any extra work that the student may wish to do.

Seventh Grade

First Week — Model No. 1.

PRACTICE.

1. Plane stock square.
2. Gauge width and thickness.

Second Week — Model No. 1, (*continued*).

PRACTICE.

1. Using knife line and dividers, draw outline of model.
2. Scrape and finish same. Gouge tray.

Third Week — Model No. 1, (*continued*).

PRACTICE.

Finish gouging model.

Fourth Week — Model No. 1, (*continued*).

PRACTICE.

1. Scrape and sandpaper pen-tray.
2. Finish pen-tray.

Students at this time must decide on the model which they wish to make for the coming year, and as far as possible the student must make sketch of same.

Fifth Week — Model No. 2.

PRACTICE.

1. Saw out stock.
2. Plane working surface and edge on wood.

Sixth Week — Model No. 2, (*continued*).

PRACTICE.

1. Square and true all stock to dimensions.
2. Nail three vertical uprights of holder together.
3. Draw outline of model on same.
4. Cut, using turning saw.
5. Cut sides by same method.

Seventh Week — Model No. 2, (*continued*).

PRACTICE.

1. Finish outline.
2. Chamfer edges. Cut same, using back and turning saws.

Eighth Week — Model No. 2, (*continued*).

PRACTICE.

1. Chamfer edges, using
   (*a*) Chisel.
   (*b*) Spokeshave.
   (*c*) File.
2. Make covers for same.

Ninth Week — Model No. 2, (*continued*).

PRACTICE.

Gouge out pen-tray. Cut hole in brush-broom-holder.

Tenth Week — Model No. 2, (*continued*).

PRACTICE.

1. Bore holes for thimble and spool-holder. Cut pegs for same, or
2. Cut outline of brush-broom-holder, using
   (*a*) Saw.
   (*b*) Chisel.
   (*c*) File.

LEVENTH WEEK — MODEL NO. 2, (*continued*).

PRACTICE.

1. Finish all parts.
2. Sandpaper same.

WELFTH WEEK — MODEL NO. 2, (*continued*).

PRACTICE.

1. Glue together model.
2. Stain and shellac same.

HIRTEENTH WEEK — MODEL NO. 3.

PRACTICE.

Cut and square stock to dimensions.

OURTEENTH WEEK — MODEL NO. 3, (*continued*).

THEORY.

Use of Plow. No. 46 Plane.

PRACTICE.

1. Cut and dado edges.
2. Miter corners, using miter box.

FIFTEENTH WEEK — MODEL NO. 3, (*continued*).

PRACTICE.

1. Glue and paste together, using
   (*a*) Corrugated fasteners.
   (*b*) Miter clamps.

SIXTEENTH WEEK — MODEL NO. 3, *continued*).

PRACTICE.

Sandpaper and stain in mission.

The remainder of the year may be used in constructing special models; i. e., tie-racks, clothes-driers, stationery-holders, tabourets, book-racks, etc.

EIGHTH GRADE

IRST WEEK — MODEL NO. 1.

THEORY (*ten minutes*).

Talks on practical furniture construction.
Design.

PRACTICE.

1. Saw out stock to approximate dimensions.
2. Begin squaring stock true to dimensions.

SECOND WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Talks on practical furniture construction.
Size for strength.

PRACTICE.

1. Finish planing stock square and true to dimensions.
2. Draw outline of ends. Lay out mortises.

THIRD WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Talks on practical furniture construction.
(*a*) Wood used (best for staining).
(*b*) Staining (application).

PRACTICE.

1. Cut mortises in ends.
2. Draw outline, lay out tenons for shelf, and cut.
3. Make keys.

FOURTH WEEK — MODEL NO. 1, (*continued*).

THEORY (*ten minutes*).

Talks on practical furniture construction.
Finishing, filling, wax, varnish.

PRACTICE.

1. Sandpaper stock.
2. Assemble the parts.
3. Stain, fill, varnish.

FIFTH WEEK — MODEL NO. 2.

THEORY (*ten minutes*).

Talks on practical furniture construction.
Special tools and machinery.

PRACTICE.

1. Saw the stock for model.
2. Begin planing stock square and true to dimensions.

SIXTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Talks on practical furniture construction.
Various methods of making glued joints.
(*a*) Doweling.
(*b*) Tongue and grooving.
(*c*) Rubbed joints.
(*d*) Thickness of layer of glue.

PRACTICE.

1. Finish planing stock square and true to dimensions.
2. Chamfer edges if necessary. Lay out and cut ends.
3. Lay out and bore mortises and tenons.

SEVENTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Making out a lumber order.
Terms used.

PRACTICE.

1. Finish cutting joints.
2. Sandpaper model.

EIGHTH WEEK — MODEL NO. 2, (*continued*).

THEORY (*ten minutes*).

Talk on cabinet design.

PRACTICE.

1. Stain model.
2. Fill "
3. Wax "

NINTH WEEK — MODEL NO. 3.

THEORY (*ten minutes*).

Talk on building construction.
Frame work.

PRACTICE.

1. Saw stock for model.
2. Begin planing stock square and true to dimensions.

TENTH WEEK — MODEL NO. 3, (*continued*).

THEORY (*ten minutes*).

Talk on building construction.
Rafters and roof.

PRACTICE.

1. Finish planing stock square and true to dimensions.
2. Lay out and cut mortise and tenon joints.

ELEVENTH WEEK — MODEL NO. 3, (*continued*).

THEORY (*ten minutes*).

Talk on building construction.
(*a*) Boarding in.
(*b*) Floor, timbers, etc.

PRACTICE.

1. Finish cutting joints.
2. Lay out and cut curve. File same.

TWELFTH WEEK — MODEL NO. 3, (*continued.*)

THEORY (*ten minutes*).

Talk on building construction.
Interior finish.

PRACTICE.

1. Sandpaper and scrape model.
2. Bore holes for screws.
3. Glue joints.

THIRTEENTH WEEK — MODEL NO. 3, (*continued.*)

THEORY (*ten minutes*).

Talk on building construction.
Lath and plaster.

PRACTICE.

1. Stain.
2. Fill and varnish.

FOURTEENTH WEEK — MODEL NO. 4.

THEORY (*ten minutes*).

Staining.
(*a*) Kinds.
(*b*) Application.

PRACTICE.

1. Saw stock for model.
2. Plane stock square and true to dimensions.

FIFTEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Filler.
(*a*) Kinds.
(*b*) Application.

PRACTICE.

1. Lay out and cut curves on sides. File same.
2. Bore holes on sides for screws.

SIXTEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Shellac.
(*a*) White.
(*b*) Yellow.

PRACTICE.

1. Scrape and sandpaper stock.
2. Screw together.

SEVENTEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Varnish.

(*a*) Kinds.
(*b*) Uses.

PRACTICE.

1. Stain.
2. Fill.
3. Varnish.

EIGHTEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Pumice.

(*a*) How obtained.
(*b*) How used.

PRACTICE.

1. Saw stock for model.
2. Plane stock square and true to dimensions.

NINETEENTH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Rotten stone.

(*a*) How obtained.
(*b*) How used.

PRACTICE.

1. Lay out and cut mortise and tenons, where necessary.
2. Bore holes for screws.

TWENTIETH WEEK — MODEL NO. 4, (*continued*).

THEORY (*ten minutes*).

Review of previous questions.

PRACTICE.

1. Finish boring holes.
2. Scrape and sandpaper stock.
3. Cut curves if necessary.

TWENTY-FIRST WEEK — MODEL NO. 4, (*continued*).

PRACTICE.

1. Stain model.
2. Fill "
3. Shellac "
4. Wax "

TWENTY-SECOND WEEK — MODEL NO. 5.

PRACTICE.

1. Saw stock for model.
2. Joint stock for doors and back.

TWENTY-THIRD WEEK — MODEL NO. 5, (*continued*).

PRACTICE.

1. Plane stock square and true to dimensions.
2. Curve edges where necessary.

TWENTY-FOURTH WEEK — MODEL NO. 5, (*continued*).

PRACTICE.

1. Bore holes for screws.
2. Scrape and sandpaper stock.

TWENTY-FIFTH WEEK — MODEL NO. 5, (*continued*).

PRACTICE.

1. Screw model together.
2. Place hinges on door.

TWENTY-SIXTH WEEK — MODEL NO. 5, (*continued*).

PRACTICE.

1. Stain model.
2. Fill "

TWENTY-SEVENTH WEEK — MODEL NO. 6.

PRACTICE.

1. Saw lumber for model.
2. Plane, etc.

TWENTY-EIGHTH WEEK — MODEL NO. 6, (*continued*).

PRACTICE.

1. Finish planing stock square and true to dimensions.
2. Lay out and cut joints.

TWENTY-NINTH WEEK — MODEL NO. 6, (*continued*).

PRACTICE.

1. Finish cutting joints.
2. Lay out curves where necessary.
3. Scrape and sandpaper.

THIRTIETH WEEK — MODEL NO. 6, (*continued*).

PRACTICE.

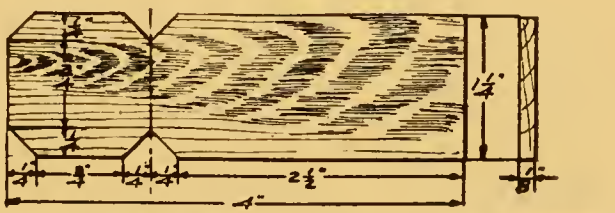
1. Stain model.
2. Fill "
3. Shellac "

Extra models to be used in course: Model No. 7, smoker's cabinet, two designs.

Manual Training in the Grades

5th Grade Model #1

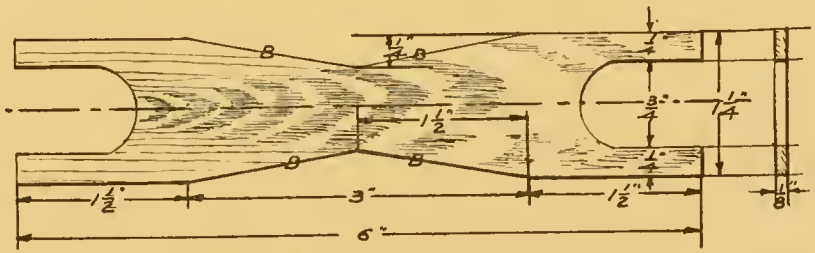
Key Tag - No - 1^



Front Elevation Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Straight whittling 2. Oblique whittling 3. Cross whittling	1. Pencil, rule, knife, and dividers 2. Coping saw 3. Compasses 4. Bit-brace 5. Sandpaper	1. Square and true stock. 2. Draw outline of model on both surfaces and cut 3. Sandpaper and shellac.

Fishline Winder #1-A

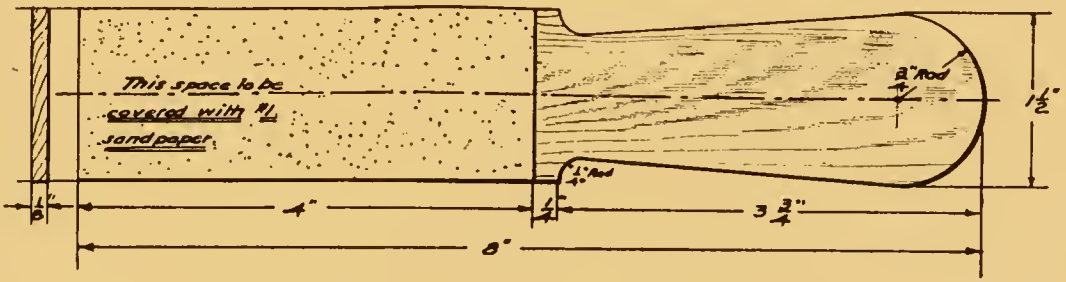


Front Elevation.

STEPS	TOOLS	ORDER OF EXERCISE
1. Straight whittling 2. Oblique whittling 3. Cross whittling 4. Boring	1. Pencil, rule, knife, and dividers 2. 3-4 inch bit 3. Sandpaper	1. Square and true stock. 2. Draw outline of model on both surfaces. 3. Cut ends *A*, using 3-4 inch bit. 4. Finish holes, using knife. 5. Cut sides *B*, using knife. 6. Sandpaper and polish.

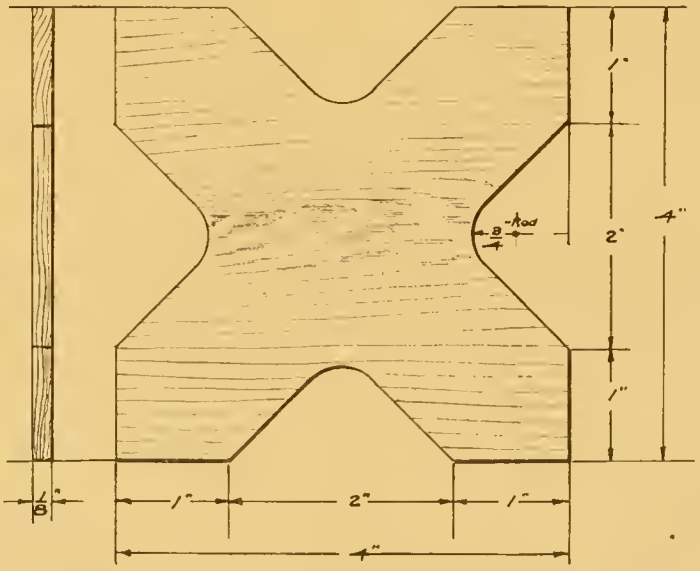
5th Grade Model #1

Sand paper block #1c



STEPS	TOOLS	ORDER OF EXEROISE
1. Straight whittling 2. Oblique whittling 3. Cross whittling 4. Coping	1. Pencil, rule, knife, and dividers 2. Sandpaper 3. Coping saw 4. Compasses	1. Square and true stock. 2. Draw outline of model on both surfaces. 3. Cut, using knife and coping saw. 4. Sandpaper 5. Glue on sandpaper and shellac.

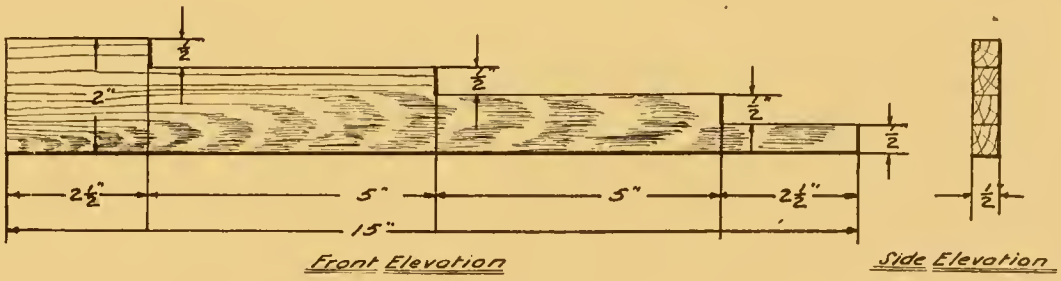
Fish Line Winder #10



STEPS	TOOLS	ORDER OF EXERCISE
1. Straight whittling 2. Oblique whittling 3. Cross whittling 4. Coping	1. Pencil, rule, knife, and dividers 2. Sandpaper 3. Coping saw	1. Square and true stock. 2. Draw outline of model on both surfaces. 3. Cut, using coping saw and knife. 4. Sandpaper and shellac.

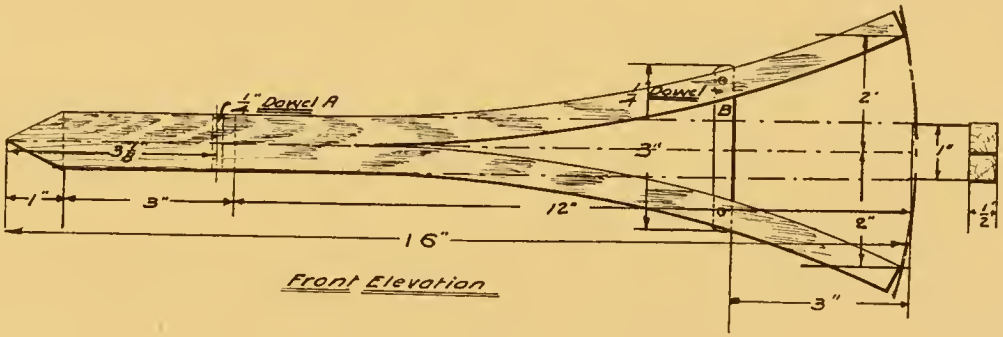
5th Grade Model #2

Window Stick #2^



STEPS	TOOLS	ORDER OF EXERCISE
1. Rip and backsawing 2. Narrow surface planing 3. Squaring 4. Gauging	1. Pencil, rule, knife, and dividers 2. Rip and backsaw 3. Jack plane 4. Try-square 5. Marking gauge	1. Square and true stock. 2. Draw outline, using knife line. 3. Saw, using back and ripsaw. 4. Finish, using No. 1 sandpaper on block.

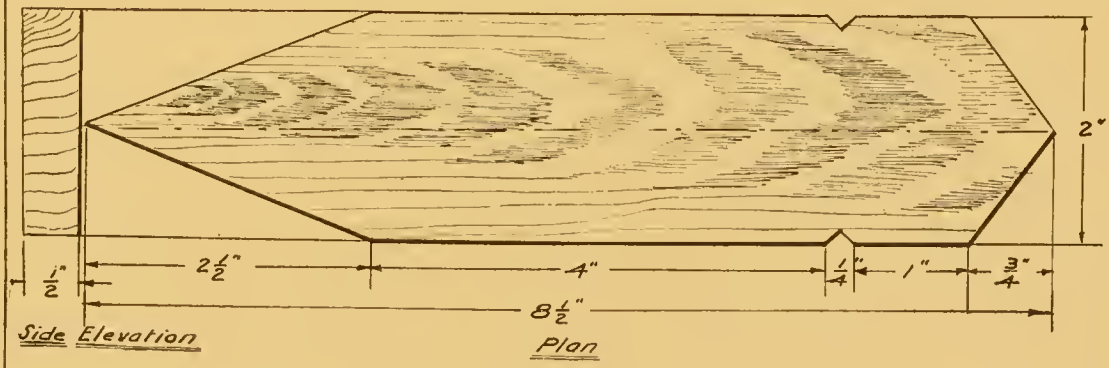
Trellis "2"



STEPS	TOOLS	ORDER OF EXERCISE
1. Rip and backsawing 2. Narrow surface planing 3. Squaring 4. Gauging 5. Boring	1. Pencil, rule, knife, and dividers 2. Rip and backsaw 3. Jack plane 4. Try-square 5. Marking gauge 6. 1-4 inch bit 7. Hammer	1. Square and true stock. 2. Draw outline, using knife. 3. Bore, and glue in dowel *A*. 4. Bore holes for dowel *B*. 5. Saw, using back and ripsaw. 6. Place dowel *B* in position and brad. 7. Sandpaper and shellac.

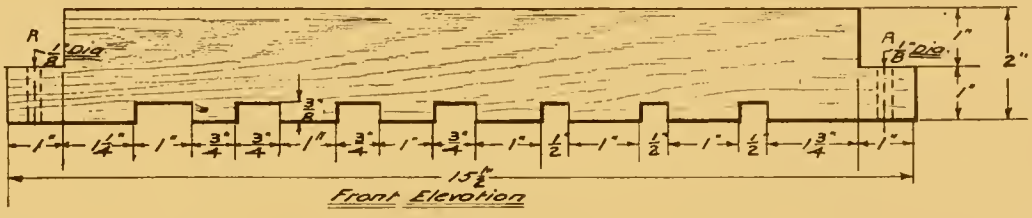
5TH Grade Model #2

Shrub label #2c



STEPS	TOOLS	ORDER OF EXERCISE
1. Rip and backsawing 2. Narrow surface planing 3. Squaring 4. Gauging	1. Pencil, rule, knife, and dividers 2. Backsaw 3. Marking gauge 4. Try-square 5. Jack plane	1. Square and true stock. 2. Gauge outline, using knife. 3. Saw, using backsaw. 4. Sandpaper and finish.

Tool Rack #20



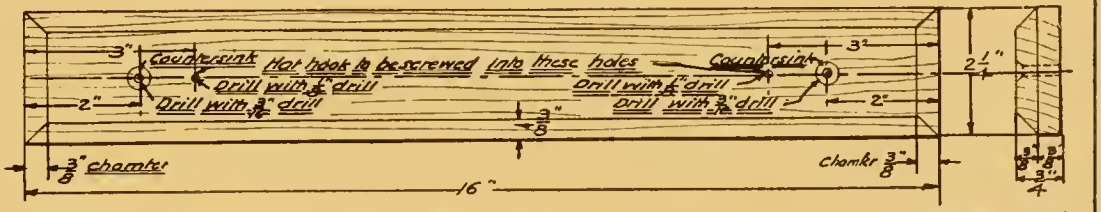
Front Elevation

Plan View

STEPS	TOOLS	ORDER OF EXERCISE
1. Rip and backsawing 2. Narrow surface planing 3. Boring 4 Squaring 5. Gauging	1. Pencil, rule, knife, and dividers 2. Marking gauge 3. Jack plane 4. Try-square and bit stock 5. 1-8 inch auger drill. 6. Countersink	1. Square and true stock. 2. Cut ends *A*. 3. Bore hole and countersink. 4. Gauge tool holder with knife line. 5. Cut. 6. Sandpaper and shellac.

5th Grade Model #3

Hat Rack #3A

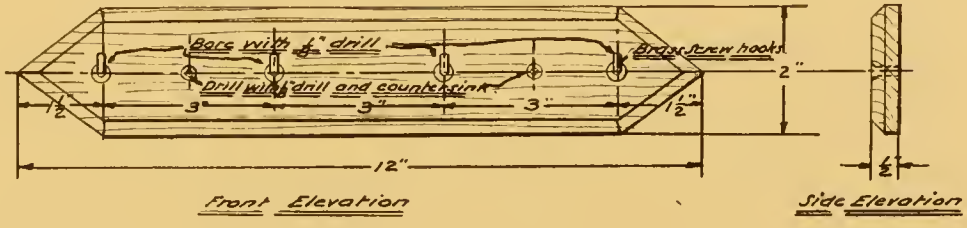


Front Elevation

Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. End planing 2. Boring with drill bits 3. Countersinking 4. Chamfering	1. Pencil, rule, knife, and dividers 2. Block and Jack plane 3. Bench hook 4. 1-8 inch and 3-16 inch drills and bit brace 5. Rosecountersink 6. Marking gauge and try-square	1. Square and true stock. 2. Chamfer edges. 3. Bore holes and countersink. 4. Finish, stain, and polish.

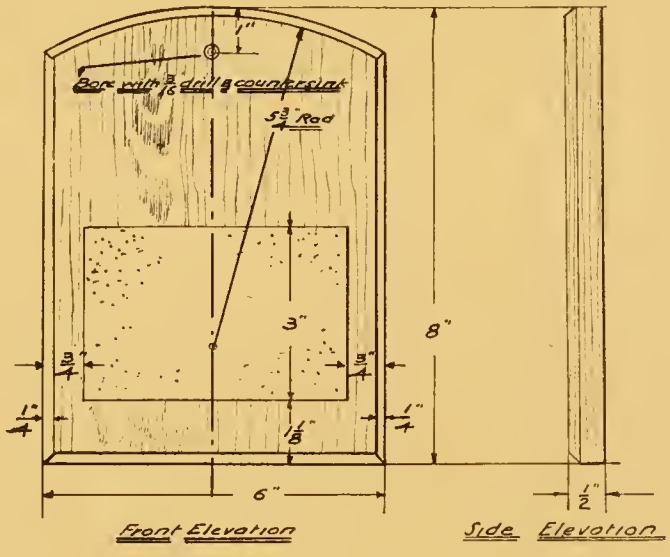
Key Board #3B



STEPS	TOOLS	ORDER OF EXERCISE
1. End planing 2. Boring, with drill 3. Countersinking 4. Chamfering	1. Pencil, rule, knife, and dividers 2. Block and Jack plane 3. Bench hook 4. 1-8 inch drill and bit brace 5. Rosecountersink 6. Marking gauge and try-square	1. Square and true stock. 2. Cut ends and chamfer edges. 3. Bore holes and countersink. 4. Finish, stain, and polish.

5th Grade Model #3

Calender Mount #3c



STEPS	TOOLS	ORDER OF EXERCISE
1. End planing 2. Boring with drill bit 3. Countersinking 4. Chamfering	1. Pencil, rule, knife, and dividers 2. Block and Jack plane 3. Bench hook 4. Countersink 5. 3-16 inch drill	1. Square and true stock 2. Chamfer edges. 3. Bore hole. 4. Finish, stain, and polish.

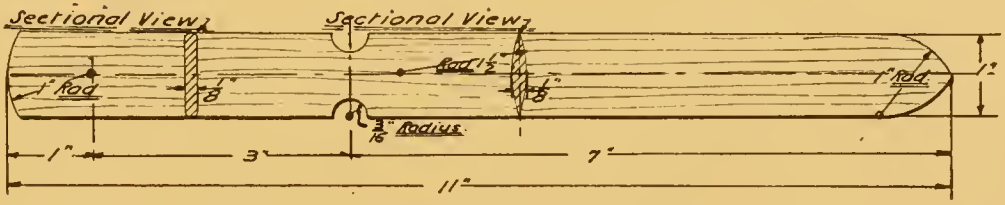
Swing Board #3D

Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. End planing 2. Chamfering 3. Boring with bit	1. Pencil, rule, knife, and dividers 2. Block and Jack plane 3. Bench hook 4. 1-inch bit and bit brace 5. Backsaw	1. Square and true stock. 2. Chamfer edges. 3. Bore hole and cut edges *A*. 4. Sandpaper, shellac, and polish.

5th Grade Model #4

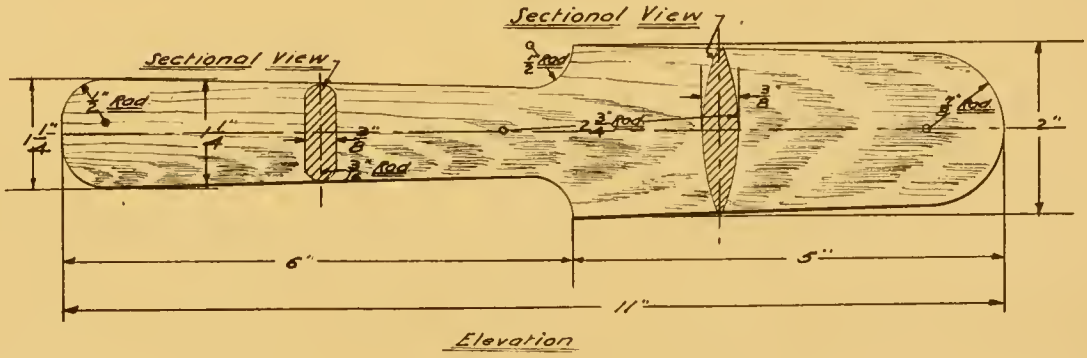
Letter Opener #4A



Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Whittling oval surface 2. Boring 3. Sandpapering	1. Pencil, rule, knife, and dividers 2. 3-8 inch centre bit 3. Block and Jack plane 4. Marking gauge 5. Try-square	1. Square and true stock. 2. Draw outline on both surfaces. 3. Bore hole. 4. Whittle to templet. 5. Sandpaper without block. 6. Shellac.

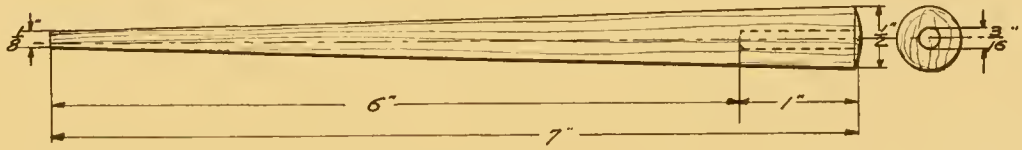
Coke Mixer #4B



Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Whittling oval surface 2. Boring 3. Sandpapering	1. Pencil, rule, knife, and dividers 2. 1-2 inch centre bit 3. Spokeshave 4. Block and Jack plane 5. Marking gauge 6. Try-square	1. Square and true stock. 2. Draw outline on both surfaces. 3. Bore 1-2 inch hole. 4. Cut down handle. 5. Whittle to templet. 6. Sandpaper without block. 7. Shellac.

5th Grade Model #4
Penholder #4C

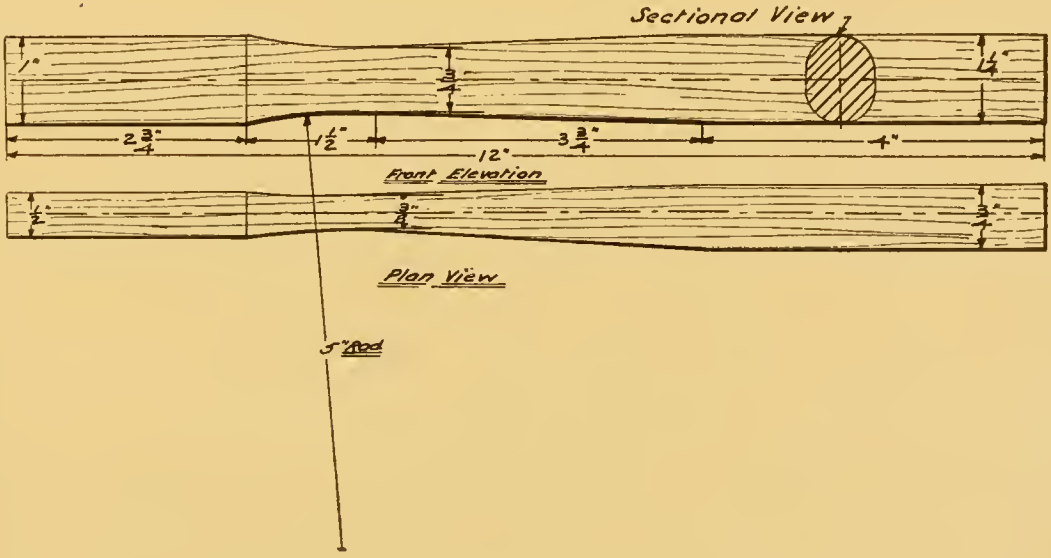


Front Elevation

Side Elevation

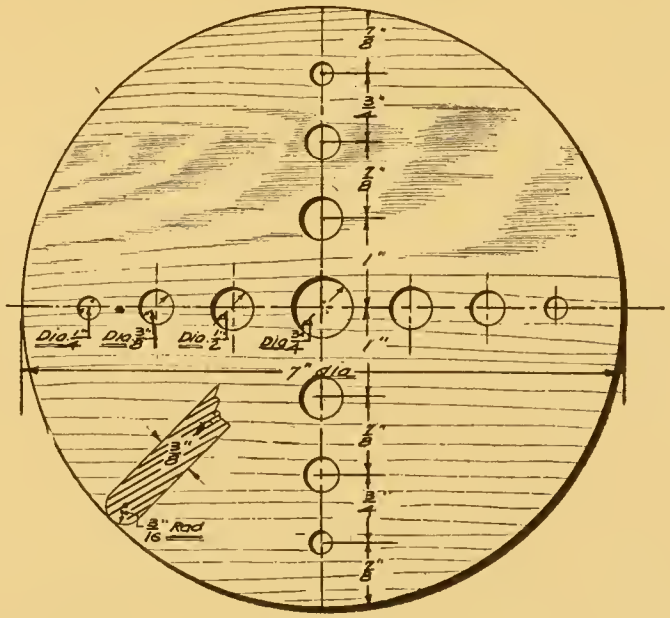
STEPS	TOOLS	ORDER OF EXERCISE
1. Whittling oval surface 2. Fitting a peg 3. Boring 4. Sandpapering	1. Pencil, rule, knife, and dividers 2. Spokeshave 3. 3-16 inch drill 4. Block and Jack plane 5. Marking gauge 6. Try-square	1. Square and true stock. 2. Bore hole for peg. 3. Round surface. 4. Sandpaper, stain, and finish.

Hammer Handle #40



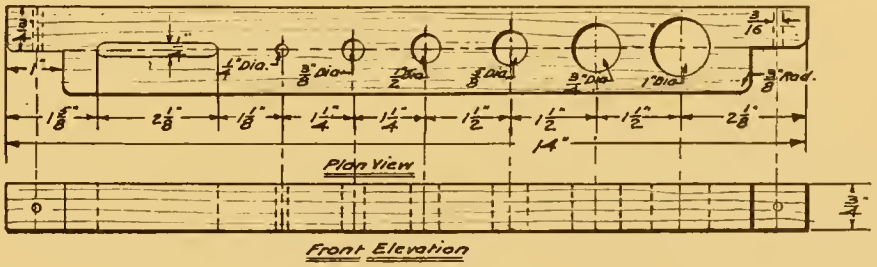
STEPS	TOOLS	ORDER OF EXERCISE
1. Whittling oval surface 2. Oblique planing 3. Sandpapering	1. Pencil, rule, knife, and dividers 2. Spokeshave 3. Block and Jack plane 4. Marking gauge 5. Try-square	1. Square and true stock. 2. Lay out and cut plan-view outline. 3. Lay out and cut elevation outline. 4. Round handle. 5. Sandpaper, stain, and shellac.

5th Grade Model #5
Table Mat #5A



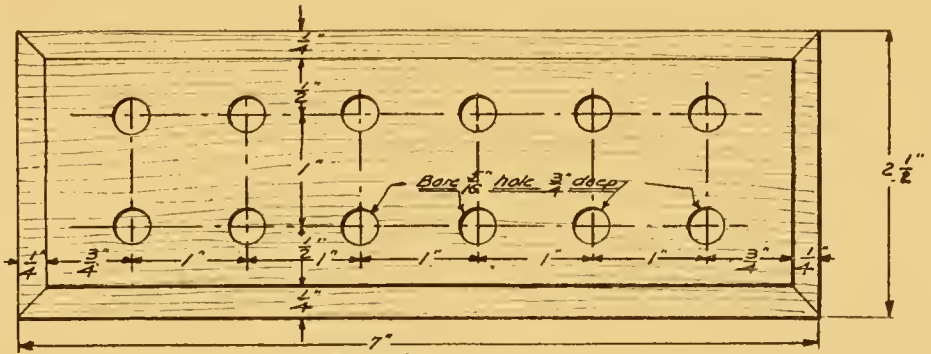
STEPS	TOOLS	ORDER OF EXERCISE
1. Using turning saw 2. Boring to certain depth 3. Use of bit gauge 4. Filing round corners 5. Sandpapering	1. Pencil, rule, knife, and dividers 2. 1-4, 3-8, 1-2, and 3-4 inch bits 3. Bit gauge and bit stock 4. Turning saw and try-square 5. File and marking gauge 6. Block and Jack plane 7. Spokeshave	1. Square and true stock. 2. Draw outline with dividers. 3. Using turning saw, saw outside of line. 4. Smooth, using spokeshave. 5. File and sandpaper. 6. Bore holes, using bit gauge.

Tool Rack #5B

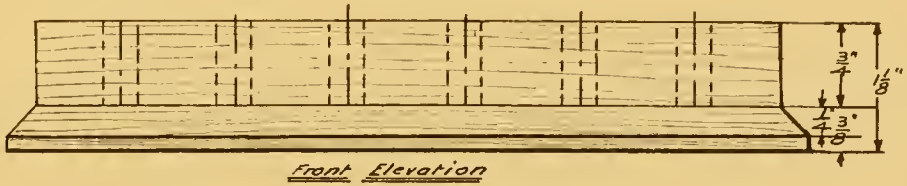


STEPS	TOOLS	ORDER OF EXERCISE
1. Boring to certain depth 2. Use of bit gauge 3. Filing round corners	1. Pencil, rule, knife, and dividers 2. 1-8, 3-8, 1-2, 5-8, 3-4 and 1 inch bits. 3. Bit gauge, and bit stock 4. Turning saw and file 5. Try-square and marking gauge 6. 3-16 inch drill 7. Block and Jack plane	1. Square and true stock. 2. Draw outline, centre lines, etc. 3. Cut corner, using backsaw. 4. Bore holes indicated. 5. Sandpaper and finish. 6. Shellac.

5TH Grade Model #5
Pencil Holder #5c



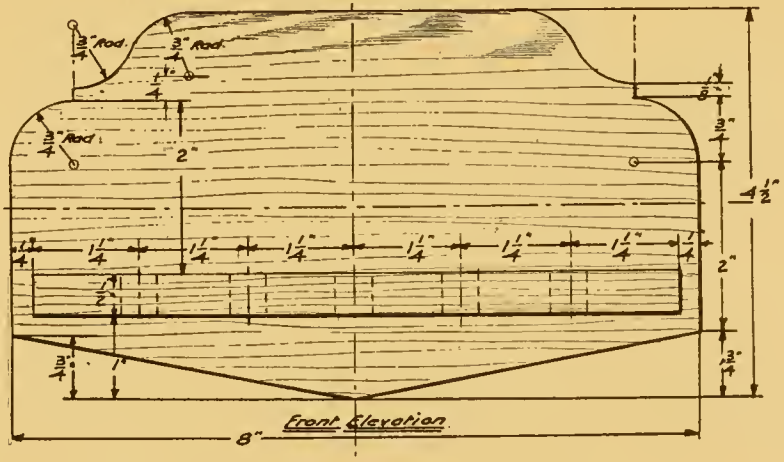
Plan View

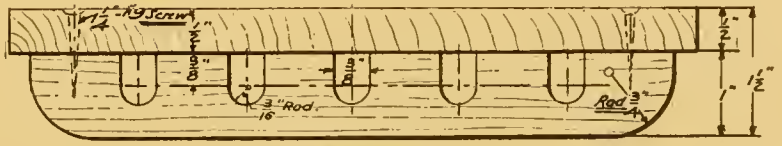


Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Boring to certain depth 2. Use of bit gauge	1. Pencil, rule, knife, and dividers 2. 5-16 inch bit 3. Bit gauge and bit stock 4. Try-square and marking gauge 5. Block and Jack plane	1. Square and true stock. 2. Chamfer base. 3. Bore holes. 4. Glue together and sandpaper. 5. Shellac and finish.

Tooth Brush Holder #5D



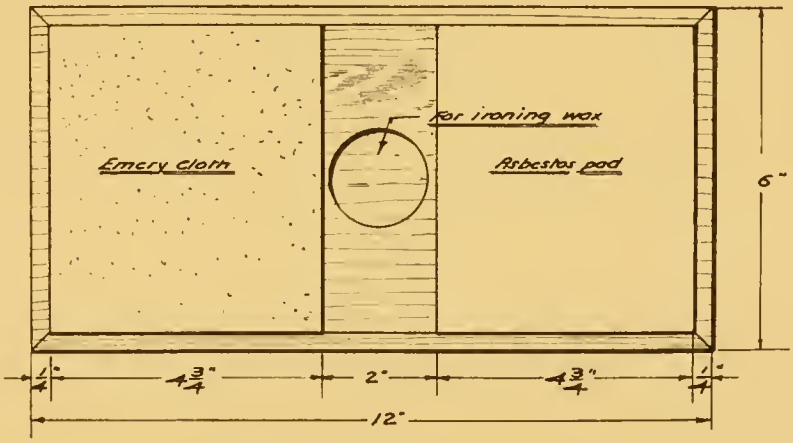


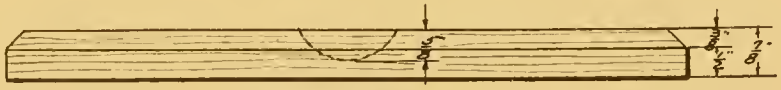
Plan View

STEPS	TOOLS	ORDER OF EXERCISE
1. Boring 2. Use of bit gauge 3. Cutting irregular edge	1. Pencil, rule, knife, and dividers 2. 3-8 inch bit 3. Bit gauge and bit stock 4. Coping saw 5. Try-square and marking gauge 6. Block and Jack plane 7. Half-round file	1. Square and true stock. 2. Draw outline of back and cut. 3. Draw centre lines of brush holder and cut. 4. Sandpaper and screw together. 5. Shellac, and polish.

5th Grade Model #6

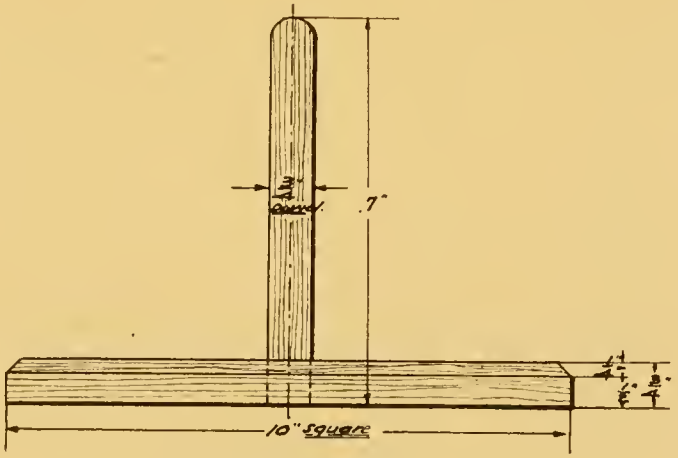
Ironing stand #6A



Plan View

Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Crosscut sawing 2. Broad surface planing 3. End planing 4. Gouging 5. Beveling	1. Pencil, rule, knife, and dividers 2. Crosscut saw 3. 1½ inch gouge 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Chamfer edges. 3. Gouge hole for ironing wax. 4. Glue on asbestos and emery cloth. 5. Sandpaper and shellac.

Ring Throw #68

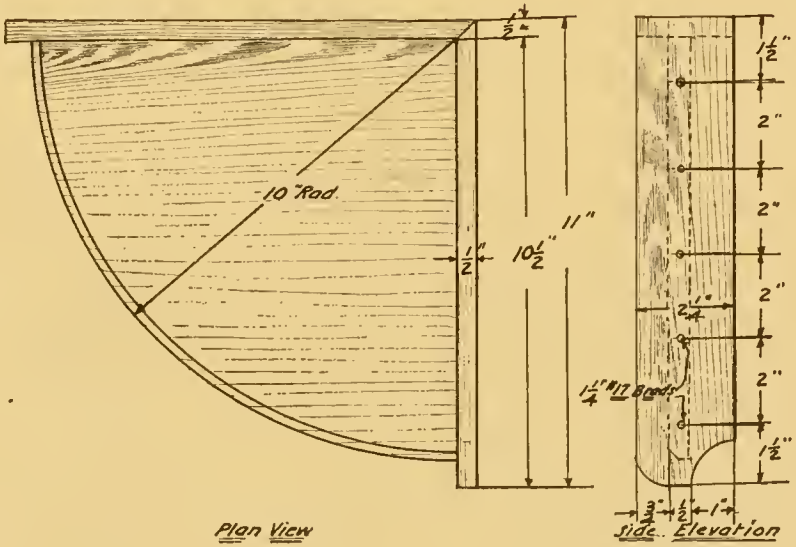


Front & Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Crosscut sawing	1. Crosscut saw	1. Square and true stock.
2. Broad surface planing	2. 3-8 inch bit	2. Chamfer edges
3. End planing	3. Marking gauge and try-square	3. Bore hole and round ends of dowels.
4. Boring	4. Block and Jack plane	4. Glue in dowels.
5. Beveling	5. Dowel pointer	5. Sandpaper and shellac.

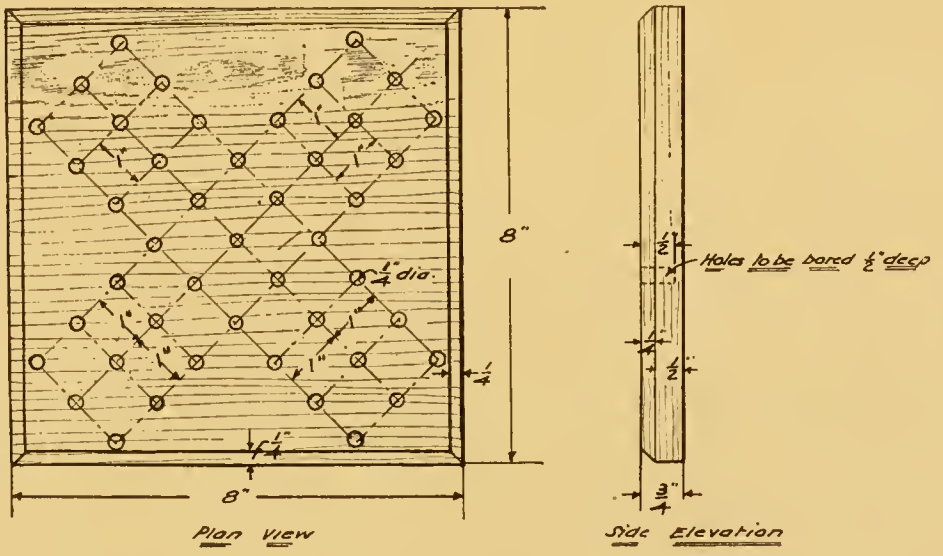
5TH Grade Model #6

Corner Shelf #6



STEPS	TOOLS	ORDER OF EXERCISE
1. Broad surface planing 2. End planing 3. Miter joints 4. Beveling 5. Gauging	1. Pencil, rule, knife, and dividers 2. Bevel 3. Coping saw 4. Marking gauge and try-square 5. Block and Jack plane 6. Hammer	1. Square and true stock. 2. Cut and bevel shelf. 3. Finish corners and miter side joints. 4. Sandpaper and nail together. 5. Set nails, stain and polish.

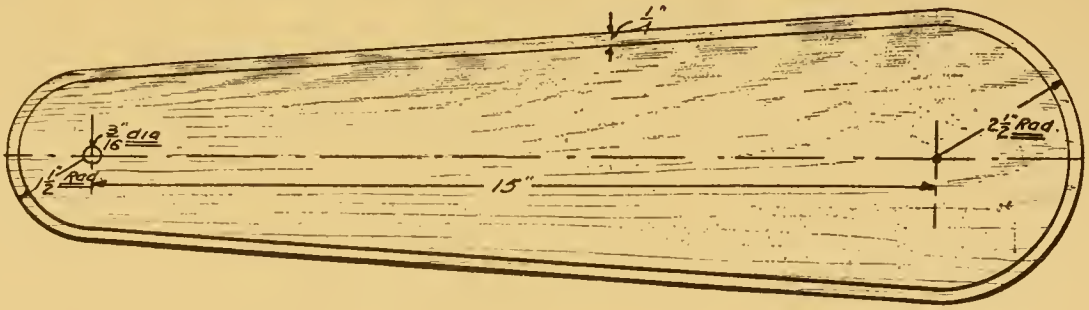
Game Board #6



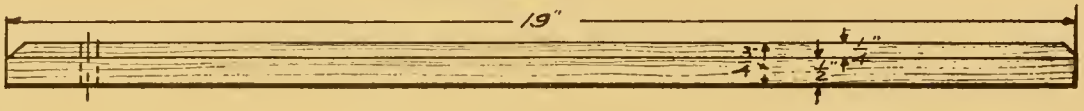
STEPS	TOOLS	ORDER OF EXERCISE
1. Crosscut sawing 2. Broad surface planing 3. Boring in parallel lines 4. End planing 5. Beveling 6. Gauging	1. Pencil, rule, knife, and dividers 2. Crosscut saw 3. 3-8 inch bit 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Chamfer edges. 3. Bore holes. 4. Sandpaper, stain, polish.

5TH Grade Model #7

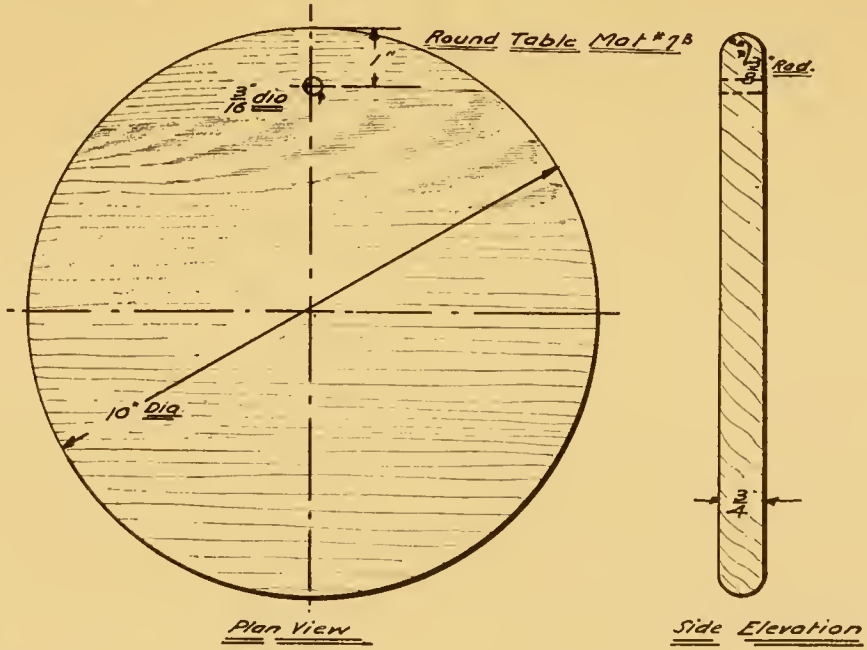
Sleeve Board - #7A



Plan View

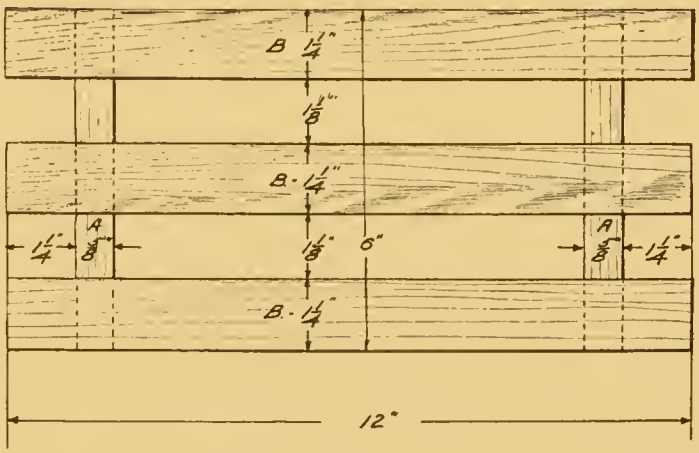


STEPS	TOOLS	ORDER OF EXERCISE
1. Curve sawing 2. Spokeshave smoothing 3. Beveling	1. Pencil, rule, knife, and dividers 2. Spokeshave 3. 3-16 inch drill 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Draw outline on both surfaces. 3. Cut, using T saw and spokeshave. 4. Chamfer edges and sandpaper. 5. Bore hole.

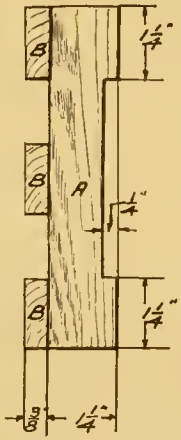


STEPS	TOOLS	ORDER OF EXERCISE
1. Curve sawing 2. Spokeshave smoothing 3. Rounding edges	1. Pencil, rule, knife, and dividers 2. Spokeshave 3. 3-16 inch drill 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Draw outline on both surfaces and cut. 3. Round edges and sandpaper.

5th Grade Model #13
Flower Pot Stand #13A



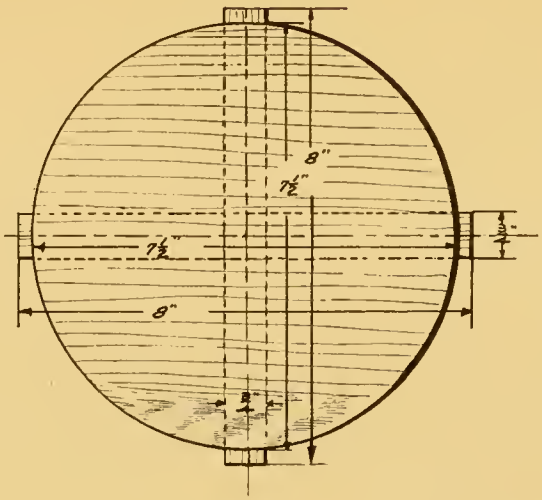
Plan View



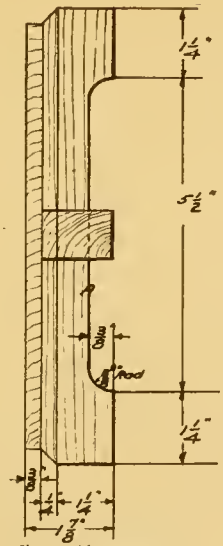
Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Chiseling 2. Nailing 3. Nail setting	1. Pencil, rule, knife, and dividers 2. 3-4 inch chisel 3. Hammer and backsaw. 4. Nail set 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Cut under part of legs *A*, using backsaw and chisel. 3. Sandpaper with block. 4. Nail model together, using 1-inch No. 17 brads. 5. Set nails, stain, shellac, and polish.

Round Flower Pot Stand "B"



Plan View

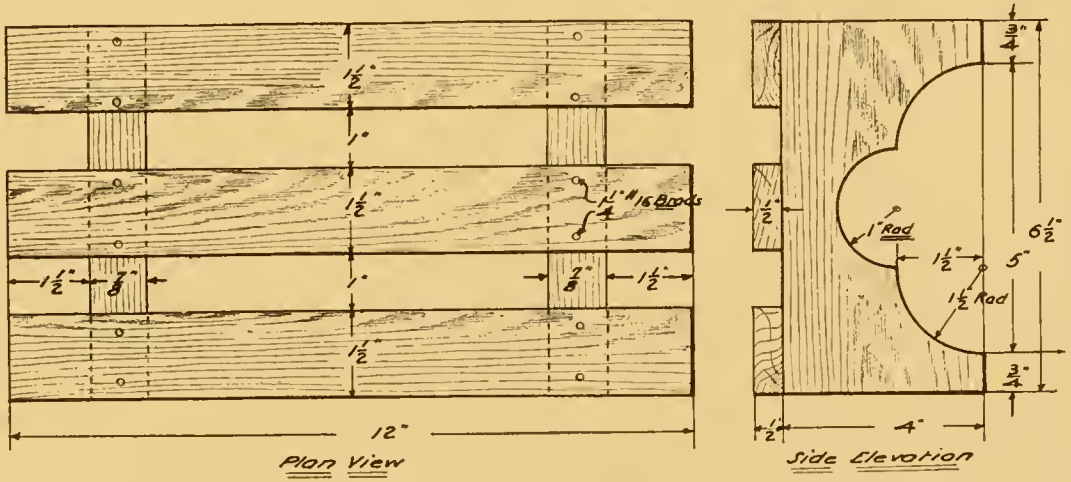


Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Chiseling 2. Half-lap joint 3. Nailing 4. Nail setting	1. Pencil, rule, knife, and dividers 2. 3-4 inch chisel 3. Hammer 4. Nail set 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Lay out and cut under part *A*. 3. Lay out and cut half-lap joint. 4. Sandpaper and glue together. 5. Nail on top, using 1-inch No. 17 brads. 6. Shellac and polish.

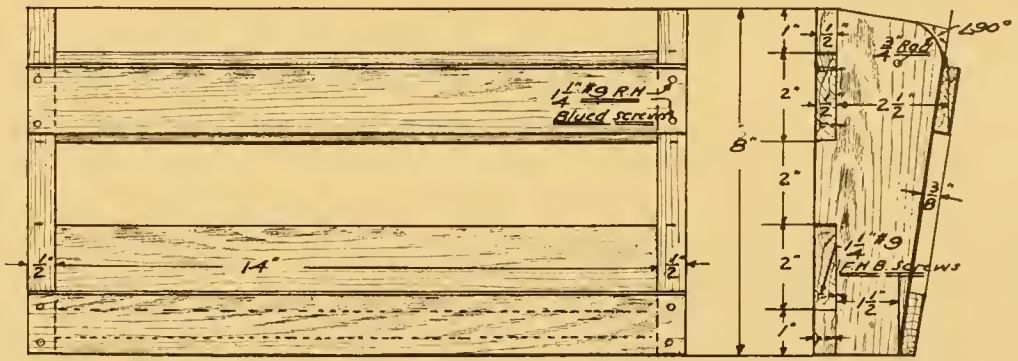
5TH Grade Model #8

Foot Stool #8c



STEPS	TOOLS	ORDER OF EXERCISE
1. Nailing 2. Nail setting 3. Curve sawing	1. Pencil, rule, knife, and dividers 2. 1-inch bit 3. Hammer and turning saw. 4. Nail set 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Draw outline of curve on side. 3. Cut, using bit and turning saw. 4. Sandpaper and brad together. 5. Stain and polish.

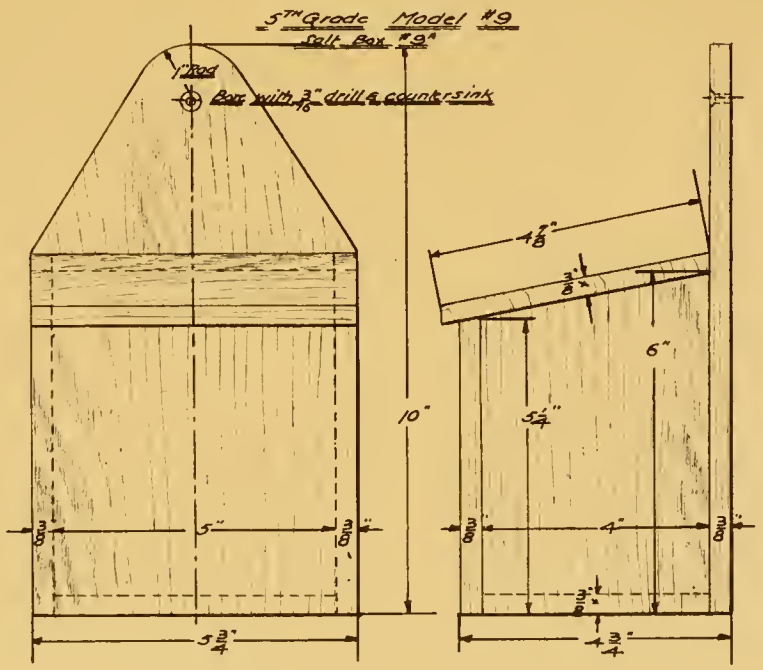
Magazine Rack #8



Front Elevation

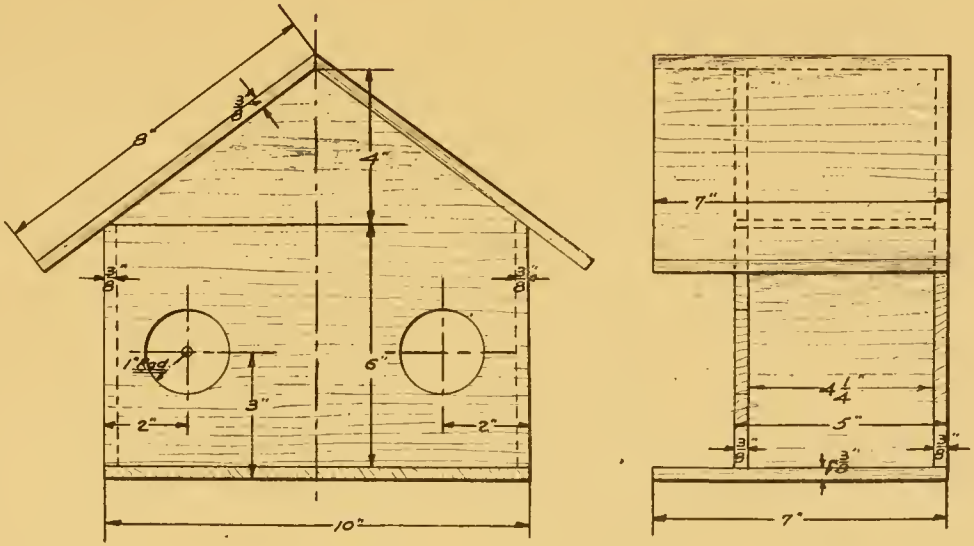
Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Chiseling 2. Half-lap joint 3. Curve sawing	1. Pencil, rule, knife, and dividers 2. 3-4 inch chisel 3. Screw driver 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Draw outline on sides and cut. 3. Fit back slats and screw to sides. 4. Fit front slats and screw to sides. 5. Sandpaper, stain and polish.



STEPS	TOOLS	ORDER OF EXERCISE
1. Fitting square joints 2. Nailing square joints 3. Fitting oblique cover 4. Curve sawing	1. Pencil, rule, knife, and dividers 2. Bevel 3. Turning-saw 4. Spokeshave and file 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Saw bevel on sides, using backsaw. 3. Using bevel, fit front to cover. 4. Nail model together, using 1-inch No. 14 brads. 5. Fit cover and hinge. 6. Sandpaper, shellac outside, and polish.

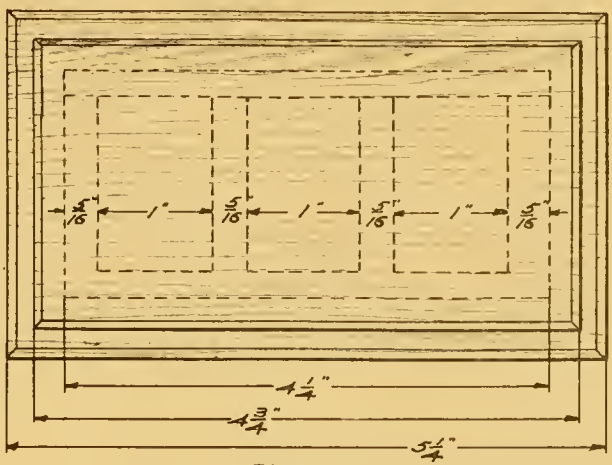
Bird House #98



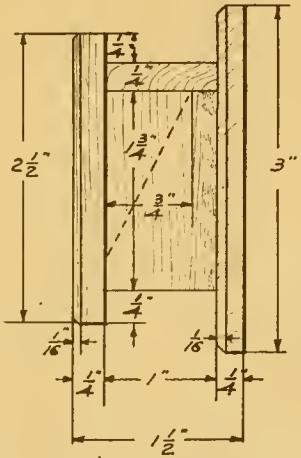
STEPS	TOOLS	ORDER OF EXERCISE
1. Fitting square joints 2. Nailing square joints 3. Fitting oblique roof	1. Pencil, rule, knife, and dividers 2. Bevel 3. Expansion bit 4. Bit stock 5. Block and Jack plane 6. Marking gauge and try-square	1. Square and true stock. 2. Saw out front and back, using backsaw. 3. Bore holes in front. 4. Using bevel, fit sides to roof. 5. Nail together, using 1-4 inch No. 14 brads. 6. Sandpaper, stain and varnish.

5th Grade Model #9

Stamp Box #9c



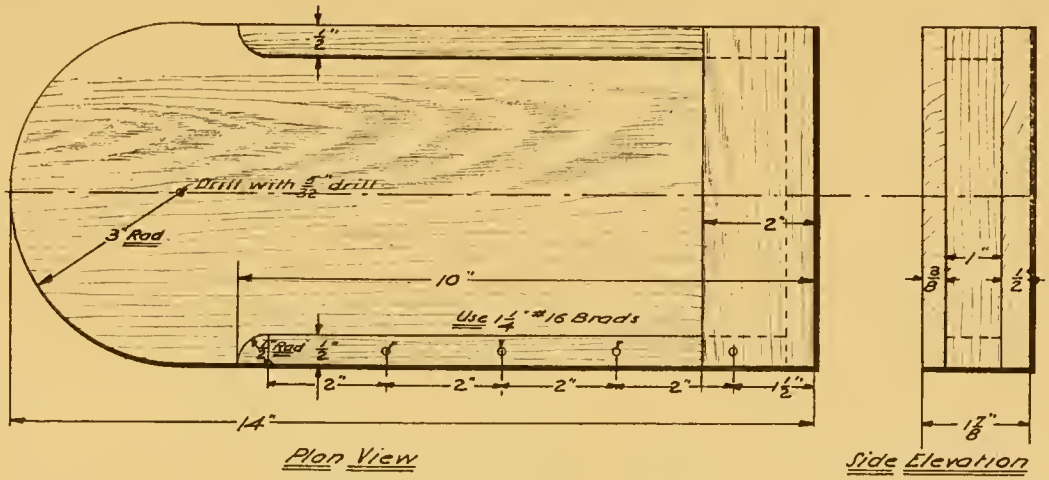
Plan View



Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Filing square joints 2. Nailing and gluing square joints 3. Fitting cover	1. Pencil, rule, knife, and dividers 2. 1-inch chisel 3. Backsaw 4. Block and Jack plane 5. Marking gauge and try-square	1. Square and true stock. 2. Cut stamp-holders, using backsaw and chisel. 3. Fit front to holder and glue. 4. Bevel base and glue to holder. 5. Fit cover and hinge. 6. Sandpaper, stain and polish.

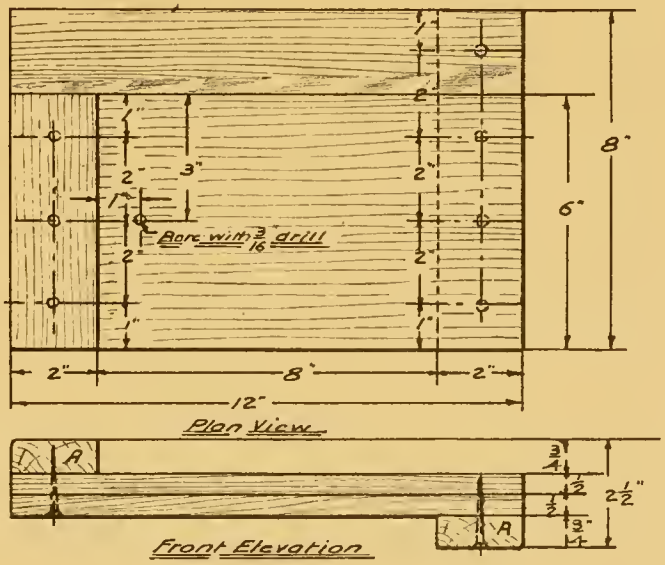
Scouring Board #90



STEPS	TOOLS	ORDER OF EXERCISE
1. Fitting square joints 2. Nailing square joints 3. Curve sawing	1. Pencil, rule, knife, and dividers 2. Nail set and hammer 3. Turning-saw 4. Spokeshave and file 5. Block and Jack plane 6. Marking gauge and try-square.	1. Square and true stock. 2. Cut sides and brad to base. 3. Fit end and brad to sides and base. 4. Fit cover and brad to sides and end. 5. Sandpaper, stain and shellac.

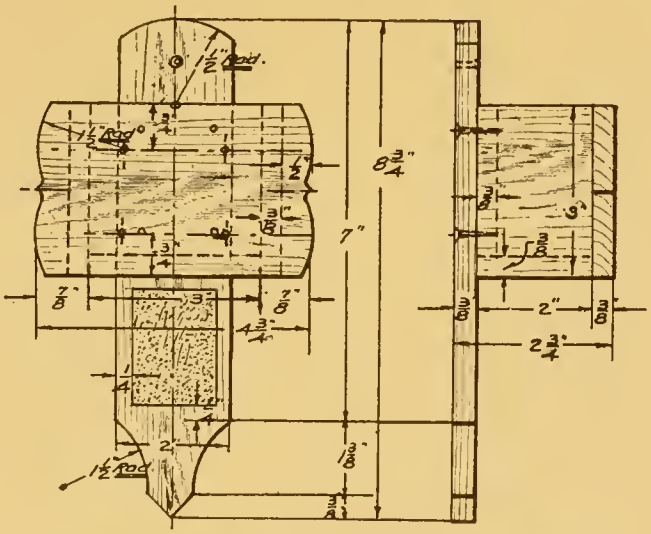
6TH Grade Model #1

Bench Hook #1a



STEPS	TOOLS	ORDER OF EXERCISE
1. Screwing 2. Gluing 3. Clamping	1. Pencil, rule, knife, and dividers 2. Countersink and bit stock 3. Screw driver and 3-16 inch drill 4. Hand clamp 5. 1½ inch No. 10 screws 6. 1-inch No. 10 screws 7. Marking gauge and try-square 8. Block and Jack plane	1. Square and true stock. 2. Glue base pieces together, using handclamp. 3. Clamp and screw carefully to base rests *A*. 4. Bore hole and round outside edges. 5. Finish and shellac.

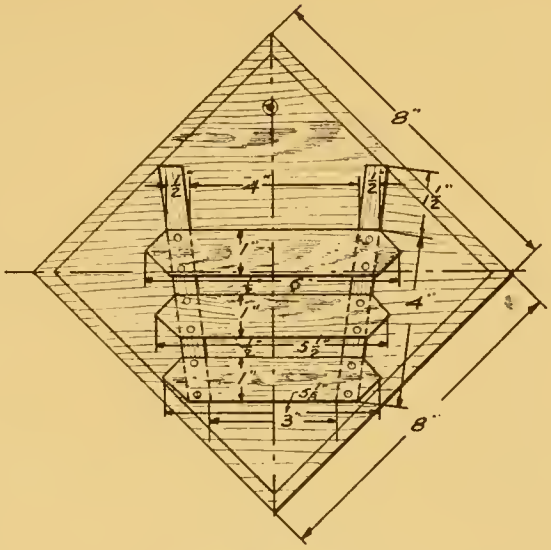
Match Box # 1 B



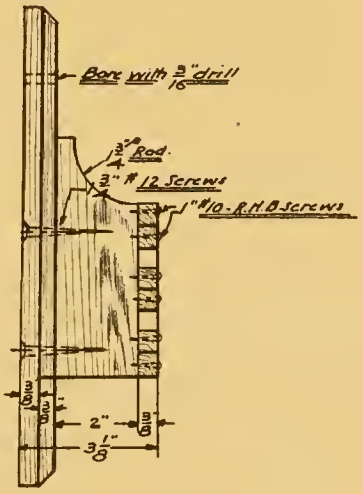
STEPS	TOOLS	ORDER OF EXERCISE
1. Clamping 2. Screwing 3. Gluing	1. Pencil, rule, knife, and dividers 2. Countersink and bit stock 3. Screw-driver and hand-clamp 4. 1-8 inch drill 5. 5-8 inch No. 8 screws. 6. Marking gauge and try-square 7. Block and Jack plane	1. Square and true stock. 2. Draw outline and cut back. 3. Cut front and glue to sides, base and back. 4. Screw match-holder to back and sandpaper smooth. 5. Glue on, sandpaper, and shellac.

6TH Grade Model #1

Whisk Broom Holder #1C



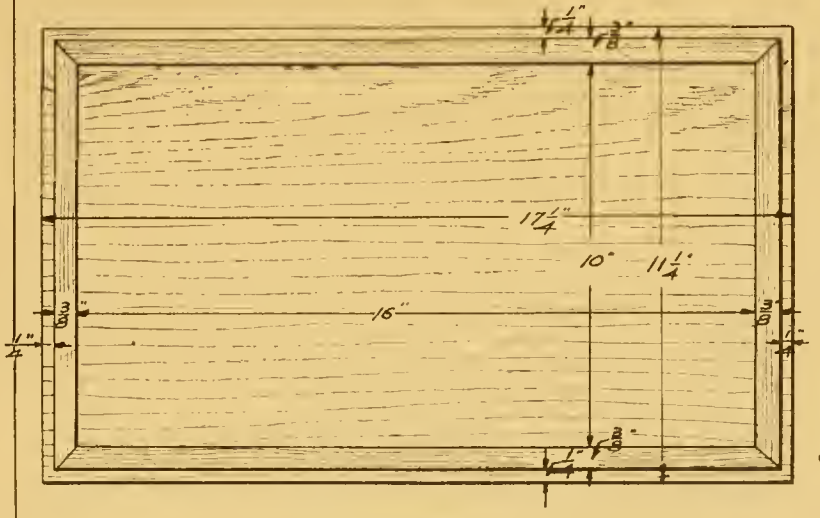
Front Elevation



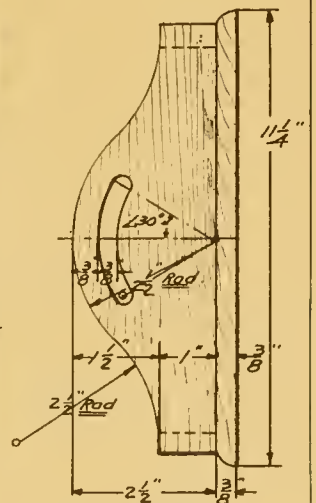
Side Elevation

STEPS	TOOLS	ORDER OF EXEROISE
1. Countersinking 2. Screwing 3. Gluing 4. Beveling 5. Clamping	1. Pencil, rule, knife, and dividers 2. Countersink and 1-16 inch drill 3. Screw driver and bit stock 4. Hand clamp 5. 1¼ inch No. 12 screws 6. 1-inch No. 10 R. H. B. screws 7. Marking gauge and try-square 8. Block and Jack plane	1. Square and true stock. 2. Chamfer back and bevel front slats. 3. Sandpaper stock, glue, and screw on slats to sides. 4. Glue on holder to base, sandpaper and shellac.

Tray #10



Plan View

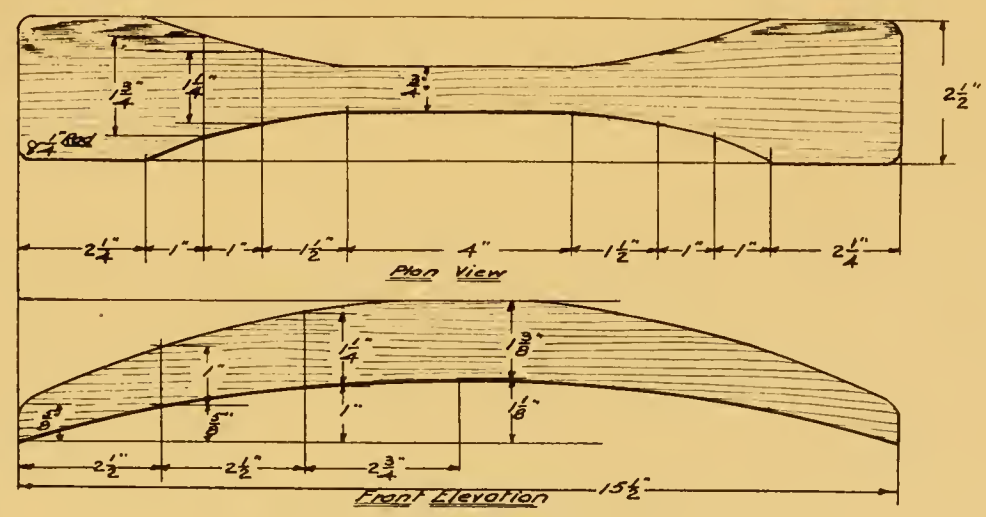


Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Rounding edges 2. Miter jointing 3. Gluing 4. Clamping 5. Nailing	1. Pencil, rule, knife, and dividers 2. Backsaw and miter clamps 3. Hand clamps and bit stock 4. 3-8 inch bit 5. Rat tail file and hammer 6. 1-inch No. 14 brads 7. Marking gauge and try-square 8. Block and Jack plane	1. Square and true stock. 2. Round edges of base. 3. Cut ends and miter joints. 4. Sandpaper and glue together. 5. Nail on base, using 1-inch No. 14 brads.

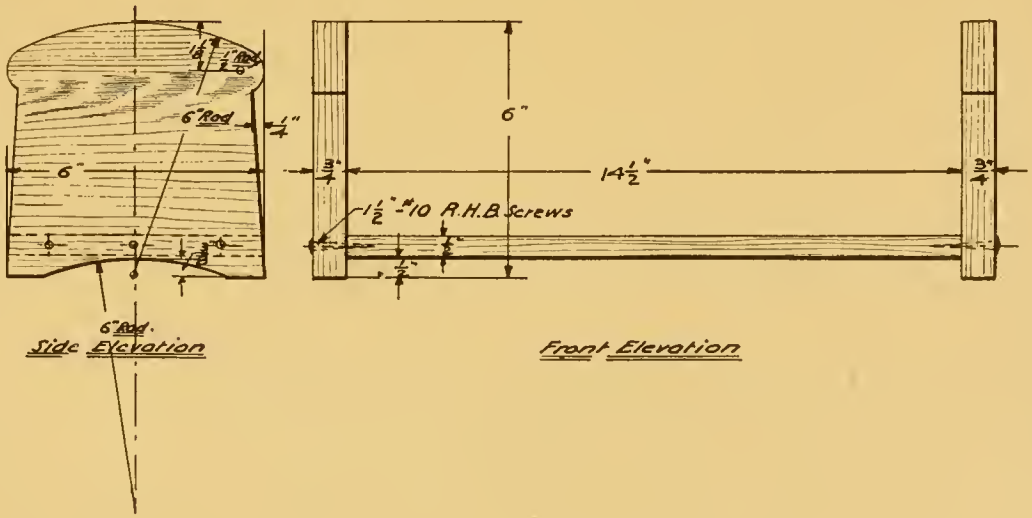
6TH Grade Model #2

Coat Hanger #2

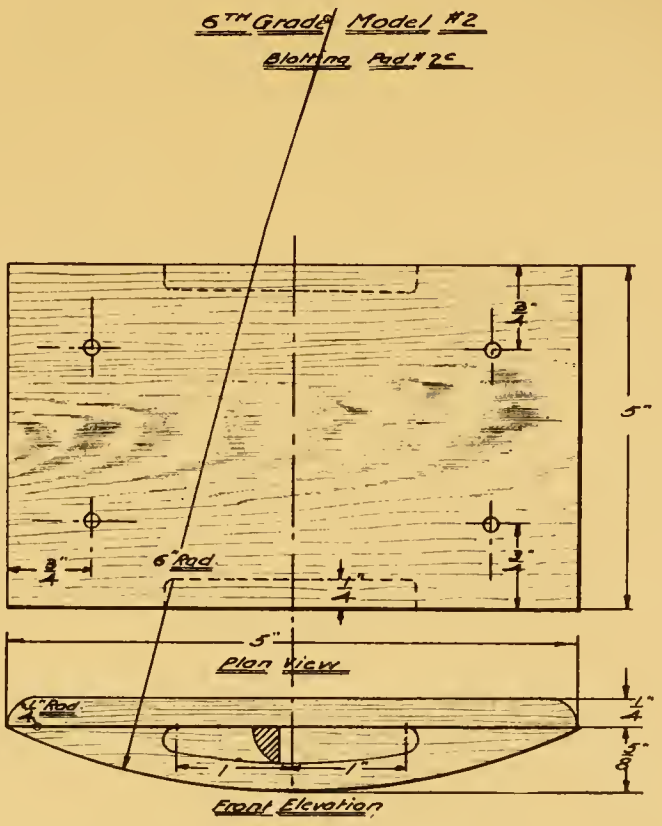


STEPS	TOOLS	ORDER OF EXERCISE
1. Curve sawing 2. Oblique planing 3. Beveling with spokeshave	1. Pencil, rule, knife, and dividers 2. Smoothing plane 3. Half-round file 4. Turning saw 5. Block and Jack plane 6. Marking gauge and try-square	1. Square and true stock. 2. Draw outline from plan view. 3. Using turning saw, spokeshave and cut to line. 4. Draw outline of front elevation. 5. Finish same as plan view.

Book Rack #2B

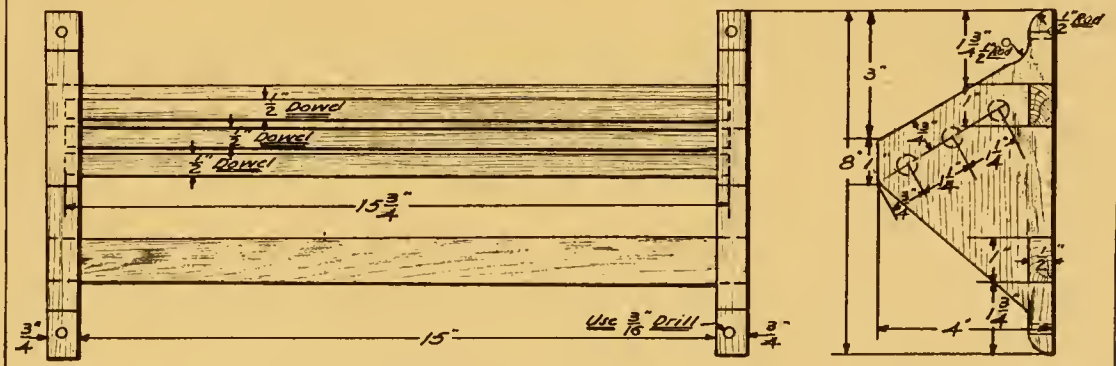


STEPS	TOOLS	ORDER OF EXERCISE
1. Beveling with spokeshave	1. Pencil, rule, knife, and dividers 2. Smoothing plane 3. Half-round file 4. Turning saw and spokeshave 5. Cabinet file 6. Marking gauge and try-square 7. Block and Jack plane 8. 1½ inch No. 10 R. H. B. screws	1. Square and true stock. 2. Mark out and cut ends. 3. Bore and screw ends to shelf. 4. Sandpaper, stain and shellac.



STEPS	TOOLS	ORDER OF EXERCISE
1. Gouging to templet 2. Curve sawing 3. Rounding edges.	1. Pencil, rule, knife, and dividers 2. 1-4 inch gouge and file 3. 1-8 inch drill and bit stock 4. Turning saw and spoke-shave 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Lay out pad cut and smooth. 3. Make top to fit and round edges. 4. Bore hole and screw together. 5. Sandpaper, stain and polish.

Rod Towel Rack #2D

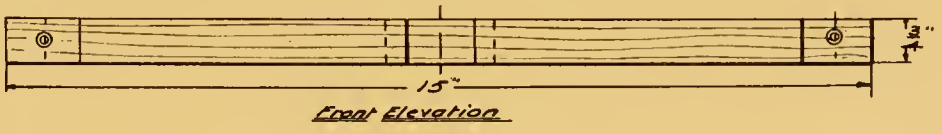


Front Elevation

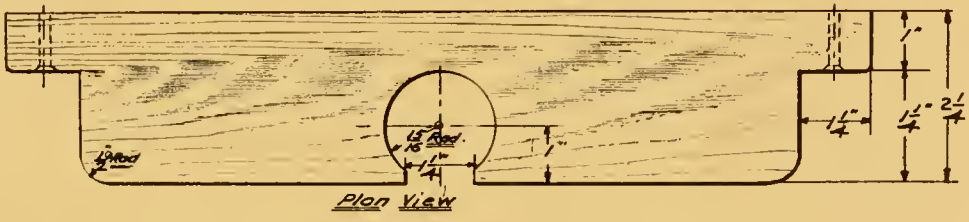
Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Irregular sawing 2. Half-lap jointing 3. Boring	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit 3. 3-16 inch drill 4. Bit stock and file 5. Try-square and marking gauge 6. Block and Jack plane	1. Square and true stock 2. Lay out and cut ends. 3. Bore holes and cut joint. 4. Fit dowels and glue in back slats 5. Sandpaper and varnish.

6TH Grade Model #3
Broom Holder #3A



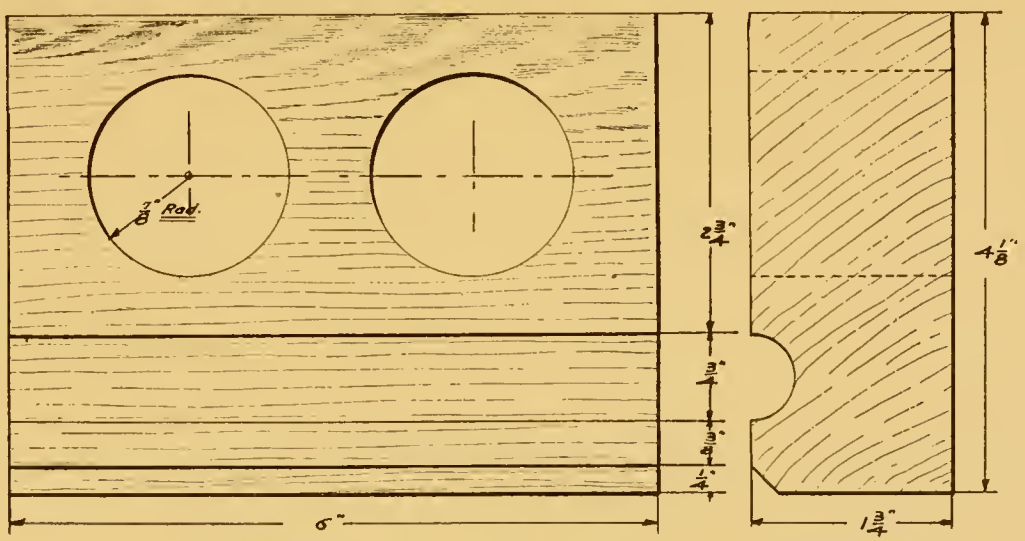
Front Elevation



Plan View

STEPS	TOOLS	ORDER OF EXERCISE
1. Cutting square corner 2. Vertical boring	1. Pencil, rule, knife, and dividers 2. 3-16 inch drill 3. Extension bit 4. Turning saw and file 5. Try-square and marking gauge 6. Block and Jack plane	1. Square and true stock. 2. Draw outlines and cut corners. 3. Bore holes in ends and countersink. 4. Bore centre hole and cut corners. 5. Sandpaper and stain model.

Round Ink Well Holder #38

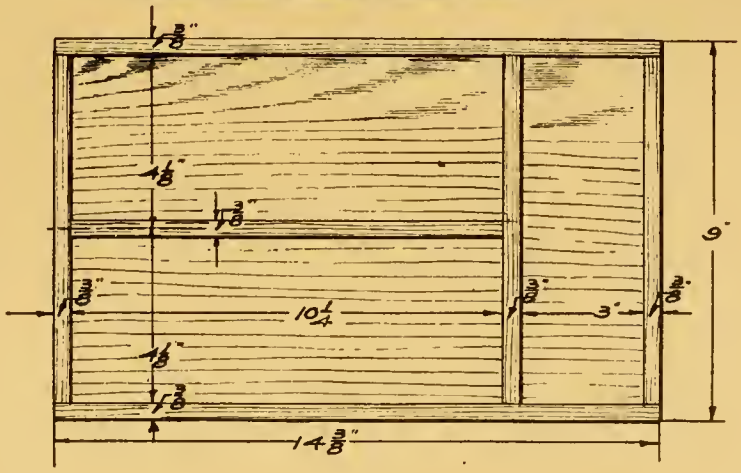


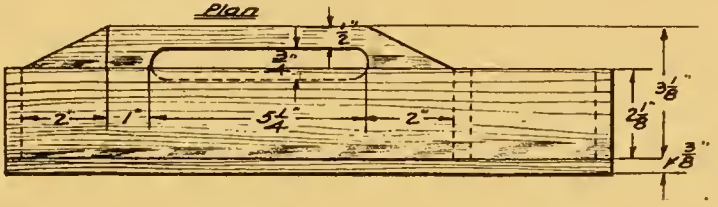
Plan View Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Vertical boring	1. Pencil, rule, knife, and dividers	1. Plane stock square and true.
2. Gouging	2. 3-4 inch gouge	2. Gouge pen-tray.
3. Chamfering	3. Extension bit and bit stock	3. Chamfer edge.
	4. Half-round cabinet scraper	4. Bore holes.
	5. Try-square and marking gauge	5. Sandpaper, stain, and polish.
	6. Block and Jack plane	

6th Grade Model #4

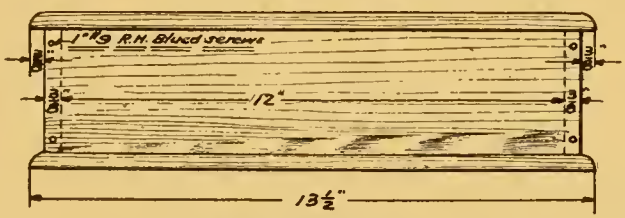
Knife Fork & Spoon Holder #40



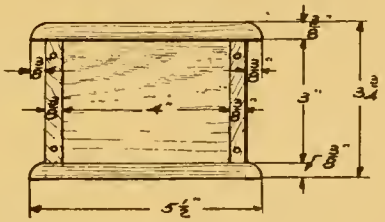


STEPS	TOOLS	ORDER OF EXERCISE
1. Compass sawing 2. Fitting square joints 3. Nailing and nail setting 4. Boring	1. Pencil, rule, knife, and dividers 2. Compass saw 3. Bradawl and hammer 4. 3-4 inch bit and bit stock 5. Try-square and marking gauge 6. Block and Jack plane 7. 1¼ inch No. 14 brads	1. Square and true stock. 2. Brad sides to front and back. 3. Nail on bottom board. 4. Place and nail centre boards. 5. Set all brads. 6. Finish with smoothing plane and scraper. 7. Sandpaper and shellac.

Glove Box #4 B



Front Elevation

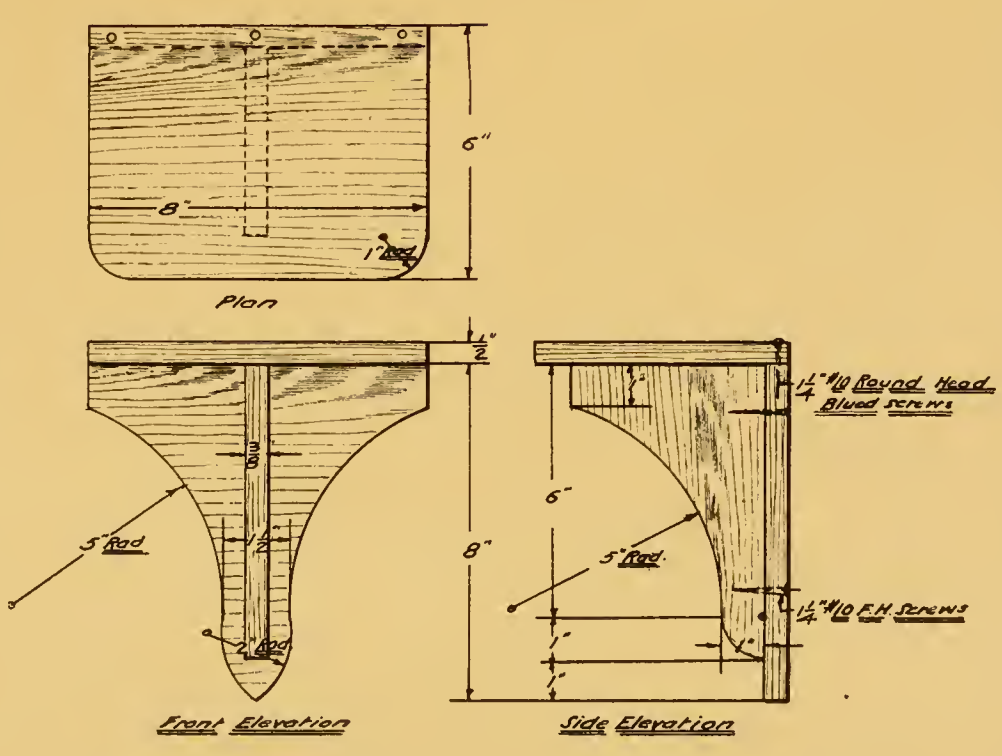


Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Fitting square joints 2. Nailing and nail setting 3. Oabinet scraping	1. Pencil, rule, knife, and dividers 2. Bradawl and hammer 3. Try-square and marking gauge 4. Block and Jack plane	1. Square and true stock. 2. Round edges of top and bottom. 3 Glue and screw sides to front and back. 4. Brad on bottom. 5. Place hinges on cover, scrape and sandpaper 6. Stain and polish.

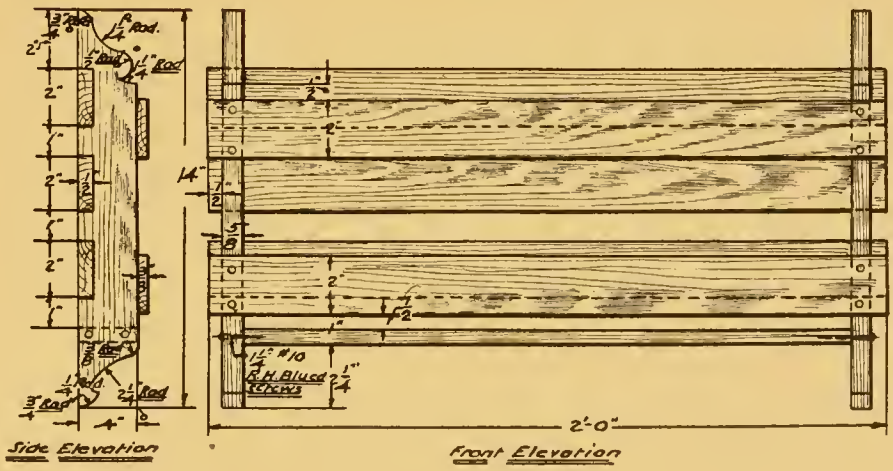
6TH Grade Model #4

Clock Shelf #4c



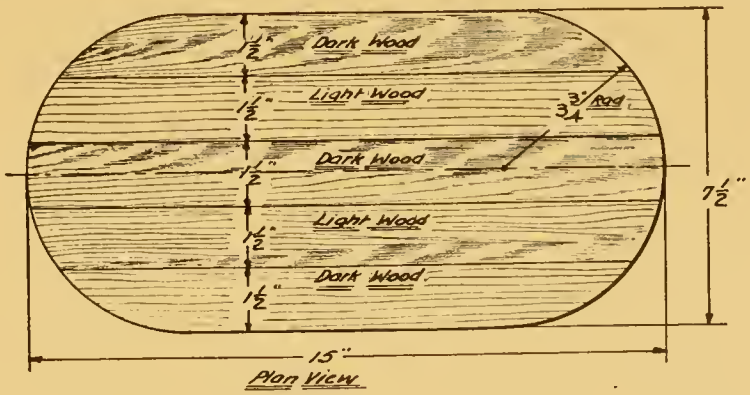
STEPS	TOOLS	ORDER OF EXERCISE
1. Fitting square joints 2. Curve sawing 3. Screwing	1. Pencil, rule, knife, and dividers 2. 1-8 inch drill and bit stock 3. File and screw-driver 4. Try-square and marking gauge 5. Block and Jack plane 6. 1¼ inch No. 10 screws 7. 1¼ inch R. H. B. screws	1. Square and true stock. 2. Mark out curves on each piece and cut. 3. Screw and glue brace to back. 4. Screw and glue top to back. 5. Finish and polish.

Magazine Rack #40



STEPS	TOOLS	ORDER OF EXERCISE
1. Coping sawing 2. Half-cap joint	1. Pencil, rule, knife, and dividers 2. Coping saw and screw-driver 3. 3-4 inch chisel 4. Half-round file 5. Back saw and hammer 6. Try-square and marking gauge 7. Block and Jack plane	1. Square and true stock. 2. Lay out curves on sides and cut. 3. Fit shelf in place and screw to sides. 4. Fit back and front slats, screw and brad in place. 5. Sandpaper, stain, and polish.

6TH Grade Model #5
Bread Board #5

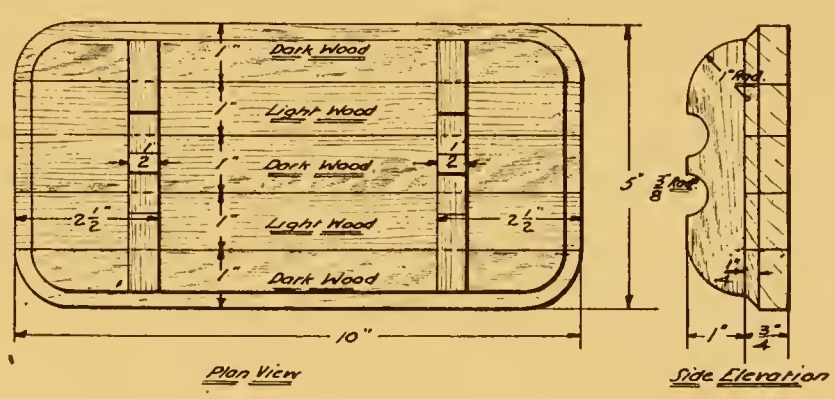


Plan View

Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Joining	1. Pencil, rule, knife, and dividers	1. Square and true stock.
2. Clamping with and across grain	2. Jointer plane	2. Joint edges and dowel.
3. Gluing	3. Cabinet and hand clamp	3. Clamp together.
4. Doweling	4. Smoothing plane	4. Wash off surplus glue.
5. Cabinet scraping	5. 3-8 inch bit and bit stock	5. Take off clamp (after 24 hours).
	6. Try-square and marking gauge	6. Finish with smoothing plane and cabinet scraper.
	7. Block and Jack plane	

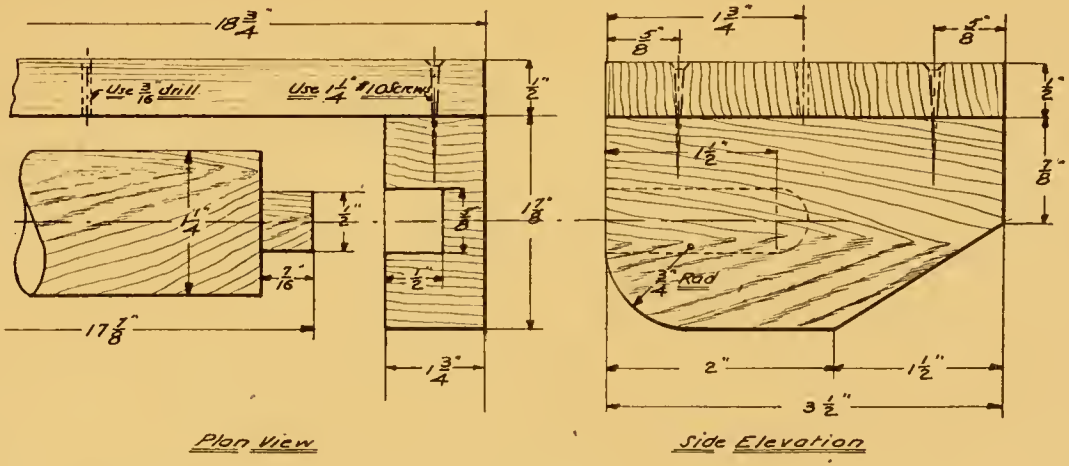
Pen Tray # 5B



STEPS	TOOLS	ORDER OF EXERCISE
1. Joining 2. Clamping with and across grain 3. Gluing 4. Doweling	1. Pencil, rule, knife, and dividers 2. Jointer plane 3. Cabinet and hand clamps 4. Smoothing plane 5. 3-8 inch bit and bit stock 6. Try square and marking gauge 7. Block and Jack plane	1. Square and true stock. 2. Joint edges and bevel. 3. Clamp together, wash off surplus glue. 4. After 24 hours remove clamps. 5. Finish surface with smoothing plane and glue on penholder. 6. Finish and polish.

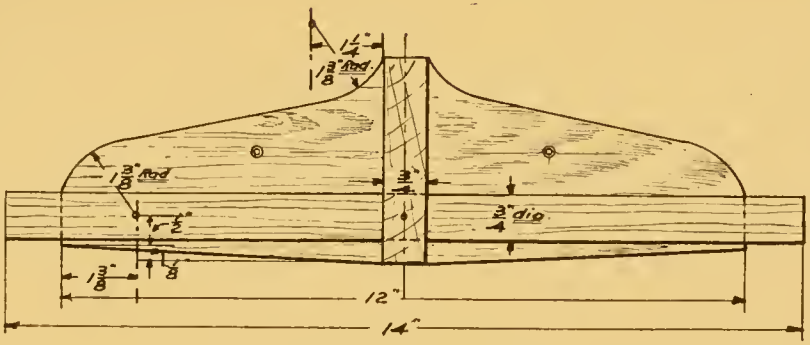
6TH Grade Model #6

Towel Roller #6A

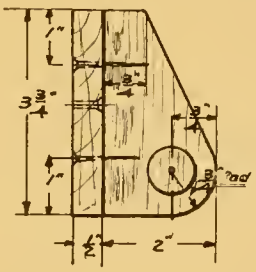


STEPS	TOOLS	ORDER OF EXERCISE
1. Planing a cylinder 2. Fitting an axle 3. Boring 4. Countersinking	1. Pencil, rule, knife, and divlders 2. 5-8 inch bit and bit gauge 3. Bit stock and 1-8 and 3-16 inch drills 4. 1¼ inch No. 10 screws 5. Backsaw and turning saw 6. Try-square and marking gauge 7. Block and Jack plane	1. Square and true stock. 2. Plane stock round for roller. 3. Using bit gauge, bore slot in arm. 4. Bevel ends of arms. 5. Bore all necessary holes. 6. Screw together, sandpaper and shellac.

Tie Holder #68



Front Elevation

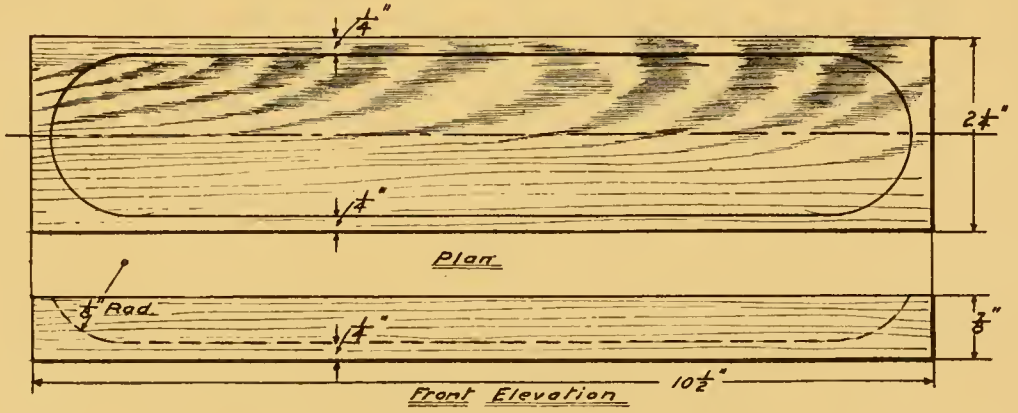


Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Planing a cylinder 2. Fitting an axle 3. Boring 4. Countersinking	1. Pencil, rule, knife, and dividers 2. 3-4 inch bit and bit stock 3. 1-8 and 3-16 inch drills 4. Backsaw and turning saw 5. File and screw-driver 6. Try-square and marking gauge 7. Block and Jack plane	1. Square and true stock. 2. Plane stock round for holder. 3. Lay out and cut back and arm. 4. Fit and screw together. 5. Sandpaper, stain, and polish.

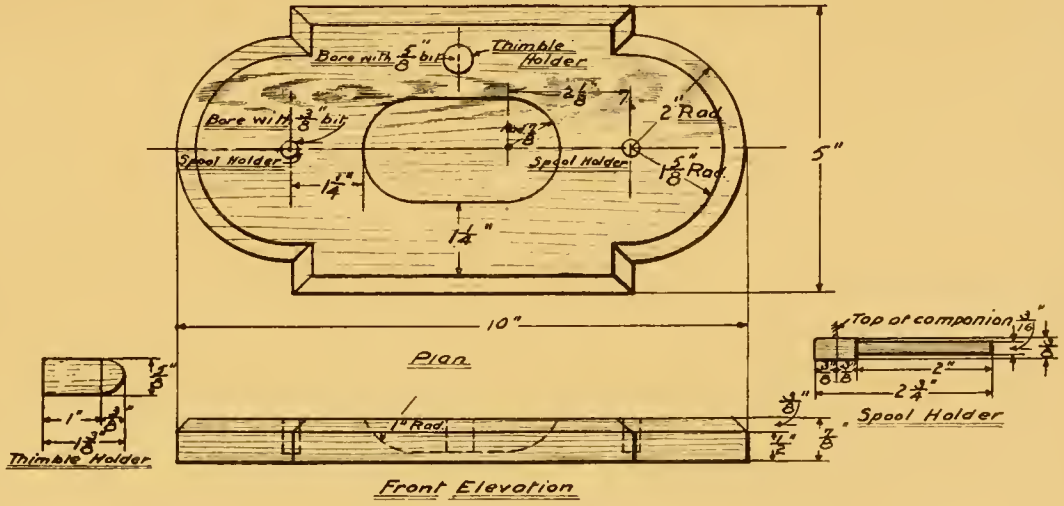
7th Grade Model #1

Pen Tray #1^



STEPS	TOOLS	ORDER OF EXERCISE
1. Grooving with gouge 2. Cabinet scraping	1. Pencil, rule, knife, and dividers 2. 1-inch gouge 3. Round cabinet scraper 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Draw outline. 3. Knife down edges 1-8 inch. 4. Gouge tray. 5. Smooth with cabinet scraper. 6. Sandpaper and polish.

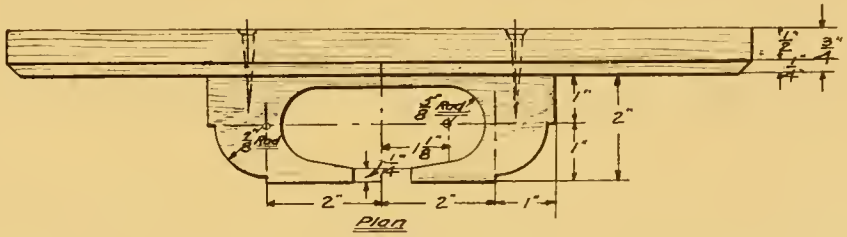
Sewing Companion "1"



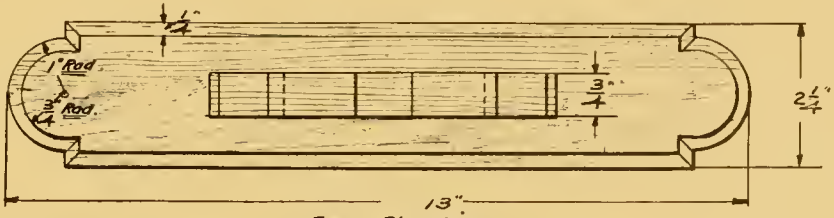
STEPS	TOOLS	ORDER OF EXERCISE
1. Grooving with gouge	1. Pencil, rule, knife, and dividers	1. Square and true stock.
2. Cabinet scraping	2. 1-inch gouge and 1-2 inch chisel	2. Draw outline.
3. Beveling round edges	3. Round cabinet scraper	3. Bore thimble and spool holes.
	4. 3-8 and 5-8 inch bit	4. Chamfer edges and gouge pin-tray.
	5. Bit stock and bit gauge	5. Make spool and thimble holder.
	6. Marking gauge and try-square	6. Sandpaper and finish.
	7. Block and Jack plane	

7TH Grade Model #1

Brush Broom Holder #1c



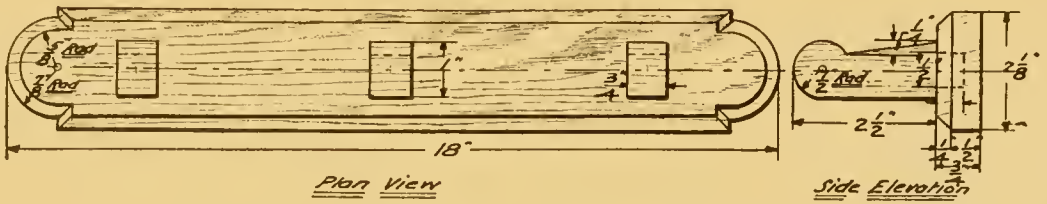
Plan



Front Elevation

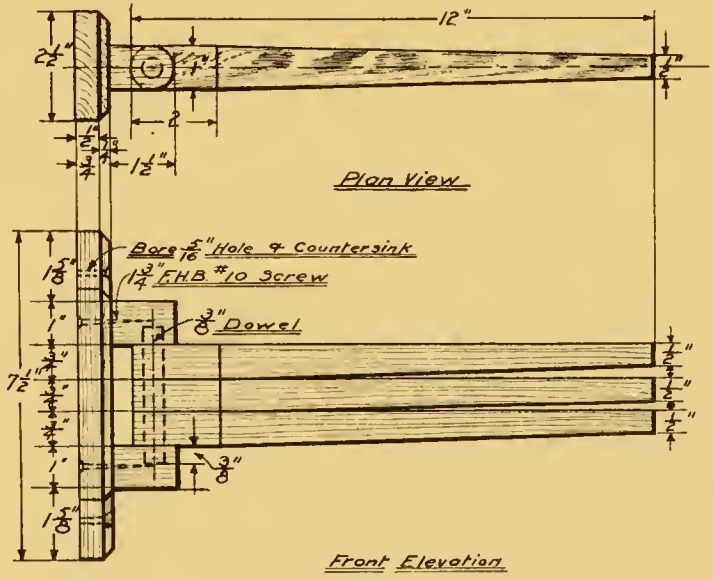
STEPS	TOOLS	ORDER OF EXERCISE
1. Beveling round edges 2. Boring	1. Pencil, rule, knife, and dividers 2. 5-8 inch bit and 1-8 inch drill 3. Bit stock and bit gauge 4. Turning saw and 1-2 inch chisel 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Draw outline of base and holder and cut. 3. Bevel edges of base. 4. Screw on holder. 5. Sandpaper, stain, and polish.

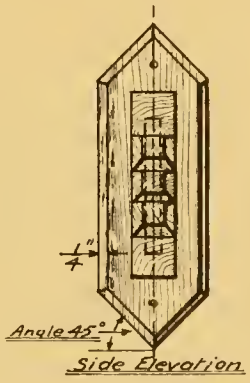
Hat Rack #1D



STEPS	TOOLS	ORDER OF EXERCISE
1. Beveling round edges 2. Paring with chisel	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit and stock 3. Turning saw and 1-2 inch chisel 4. Bit gauge 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Draw outline of base and cut. 3. Chamfer edges of base. 4. Make joints for holders and glue in. 5. Sandpaper, stain, and polish.

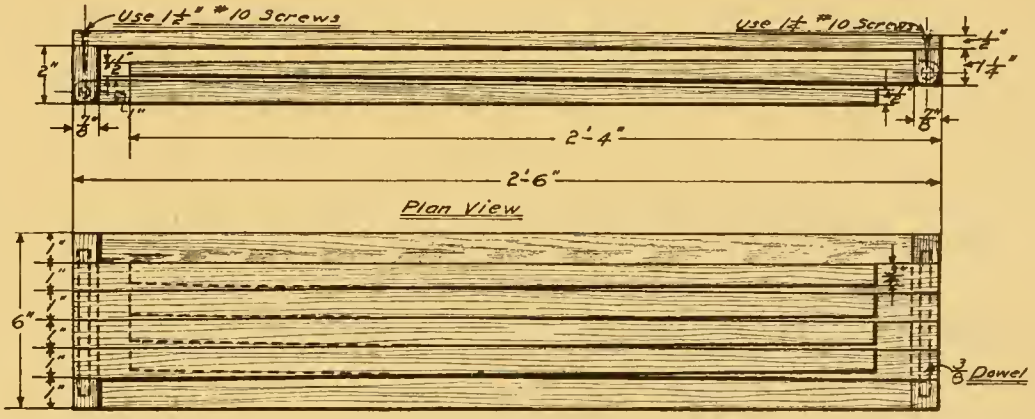
7th Grade Model #2
Towel Rack #2A





STEPS	TOOLS	ORDER OF EXERCISE
1. Cutting miter corners 2. Beveling 3. Fitting swinging arms 4. Boring	1. Pencil, rule, knife, and dividers 2. 1-8 and 5-16 inch drills 3. 3-8 inch bit and bit stock 4. Bit gauge and 1-2 inch chisel 5. Back saw and screw-driver 6. 1½ inch No. 10 R. H. B. screws 7. Marking gauge and try-square 8. Block and Jack plane	1. Square and true stock. 2. Miter corners and bevel edges of base. 3. Shape bracket and bore holes. 4. Shape arms to required dimensions. 5. Sandpaper, fit together, and glue. 6. Stain and varnish.

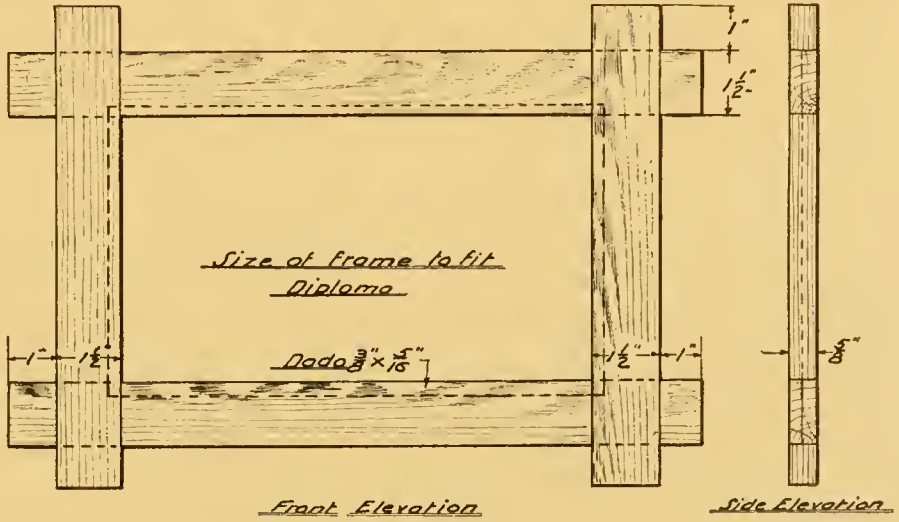
Clothes dryer "2B"



STEPS	TOOLS	ORDER OF EXERCISE
1. Fitting swinging arms 2. Boring	1. Pencil, rule, knife, and dividers 2. 1-8 and 5-16 inch drills and 3-8 inch bit 3. Bit gauge and bit stock 4. Back saw and 1-2 inch chisel 5. 1½ inch No. 10 F. H. B. screws and screw-driver 6. Marking gauge and try-square 7. Block and Jack plane	1. Square and true stock. 2. Shape brackets and bore holes. 3. Shape arms to required dimensions. 4. Sandpaper, fit together and glue. 5. Stain and varnish.

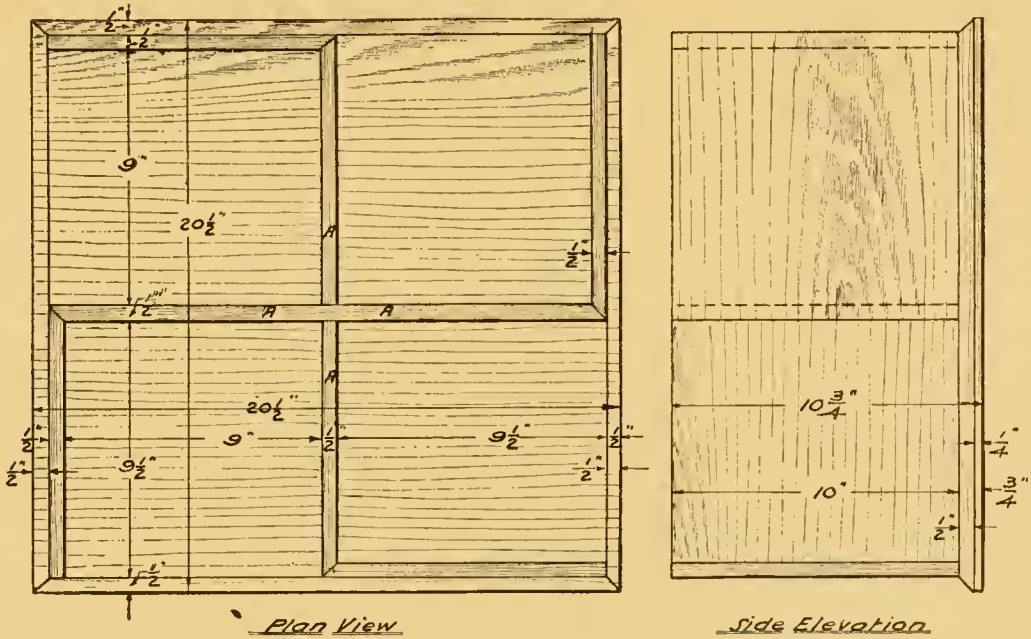
7TH Grade Model #3

Picture Frame #3A



STEPS	TOOLS	ORDER OF EXERCISE
1. Half-lap joint	1. Pencil, rule, knife, and dividers	1. Square and true stock.
2. Gluing and clamping	2. Rabbet plane and 3-4 inch chisel	2. Dado edges.
3. Dadoing	3. Hand clamp and back saw	3. Cut joints and glue together.
	4. Marking gauge and try-square	4. Sandpaper and stain.
	5. Block and Jack plane	

Book Rack #3 B



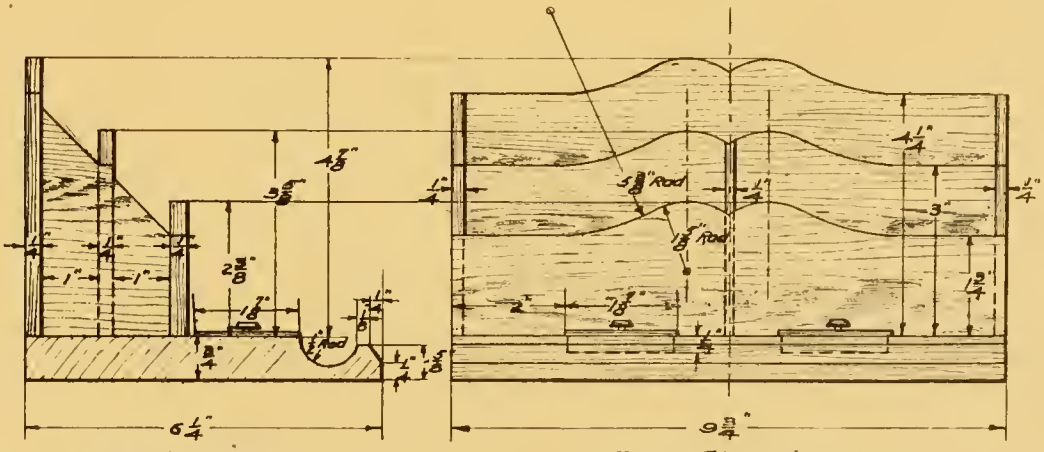
Plan View

Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Miter joints 2. Gluing and clamping	1. Pencil, rule, knife, and dlviders 2. Miter box 3. Marking gauge and try-square 4. Bit stock and 1-8 inch drill 5. 1¼ inch No. 10 screws 6. Screw-driver 7. Block and Jack plane	1. Square and true stock. 2. Miter corners where necessary. 3. Glue and clamp bookrack together. 4. Screw rack to base. 5. Sandpaper, stain and varnish.

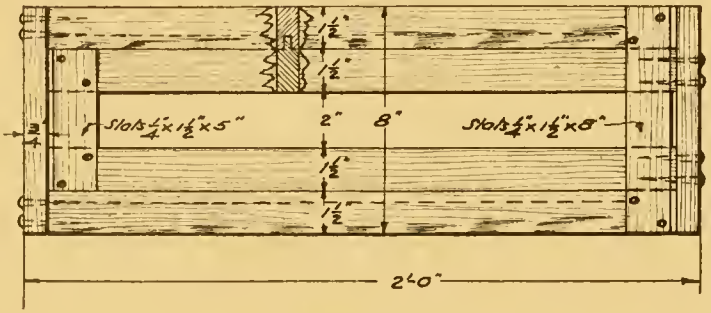
7TH Grade Model #4

Pen Ink Envelope & Paper Holder
Model #4A

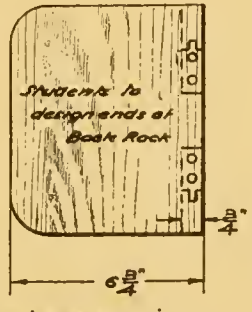


STEPS	TOOLS	ORDER OF EXERCISE
1. Mortising	1. Pencil, rule, knife, and dividers	1. Square and true stock.
2. Gouging.	2. 1-inch chisel and 1-inch gouge	2. Nail holder together.
3. Curve sawing	3. No. 8 bit, bit stock, and gauge	3. Gouge pen-tray.
	4. Turning saw and file	4. Mortise ink-well holder.
	5. Marking gauge and try-square	5. Bevel and cut edges.
	6. Block and Jack plane	6. Nail together and finish.

Model #18
Adjustable Book Rack



Plan

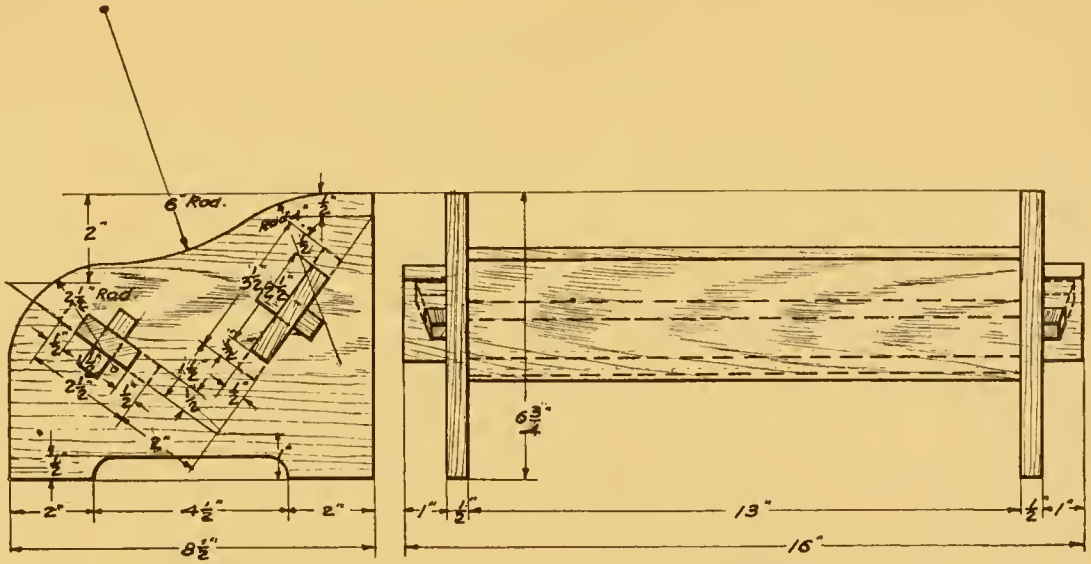


Side Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Tongue and grooving plane 2. Curve sawing	1. Pencil, rule, knife, and dividers 2. Matching plane 3. Turning saw and file 4. 1-8 and 3-16 inch drill 5. Bit stock and marking gauge 6. Try-square and screw-driver 7. Block and Jack plane	1. Square and true stock. 2. Tongue and groove the runs. 3. Screw runs on sides. 4. Screw on slats. 5. Sandpaper, stain, and shellac.

8TH Grade Model #1

Book Rack Model #1A

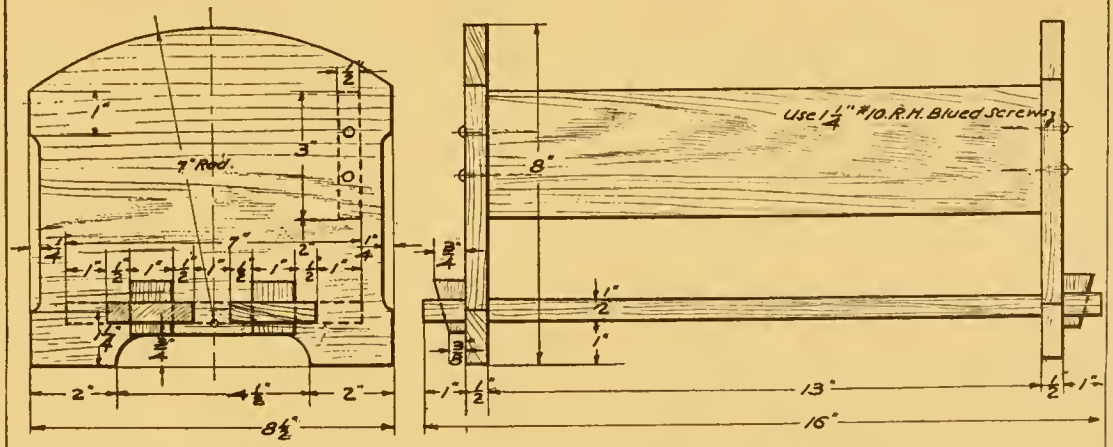


Side Elevation

Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Key, mortise, and tenon joints 2. Shelves at right angles 3. Curve sawing	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit and bit stock 3. Turning saw and half-round file 4. Marking gauge and try-square 5. Block plane and Jack plane	1. Square and true stock. 2. Draw outline of ends, lay out and cut mortises. 3. Draw outline and lay out tenons of shelves. 4. Make keys. 5. Sandpaper carefully. 6. Stain, fill, and varnish.

Book Rack Model #18



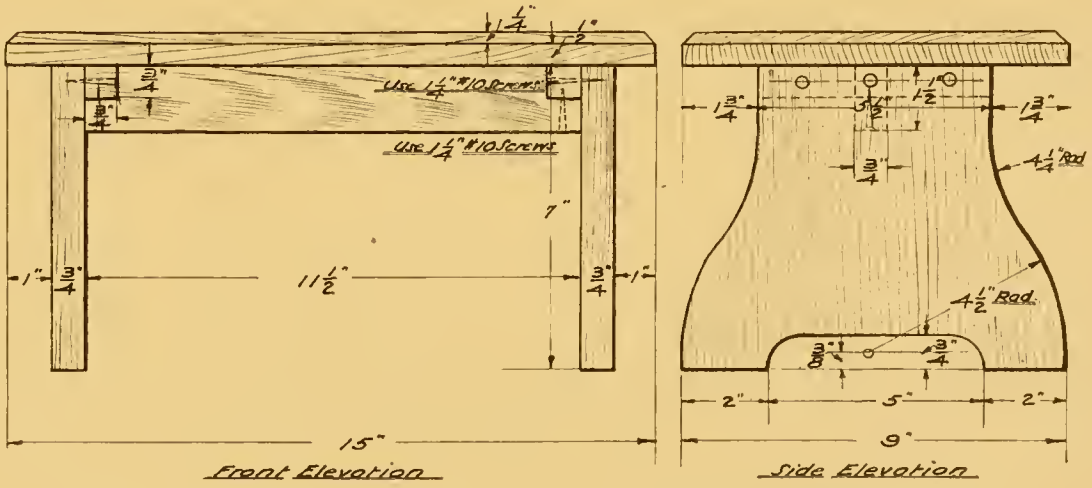
Side Elevation

Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Key, mortise, and tenon joints 2. Curve sawing	1. Pencil, rule, knife, and dividers 2. 5-8 inch bit and bit stock 3. Bit gauge and file 4. Turning saw and marking gauge 5. Marking saw and try-square 6. Block and Jack plane	1. Square and true stock. 2. Draw outline of ends, lay out and cut mortise. 3. Draw outline and lay out tenons of shelf. 4. Make keys. 5. Assemble parts and sandpaper. 6. Stain, fill, and varnish.

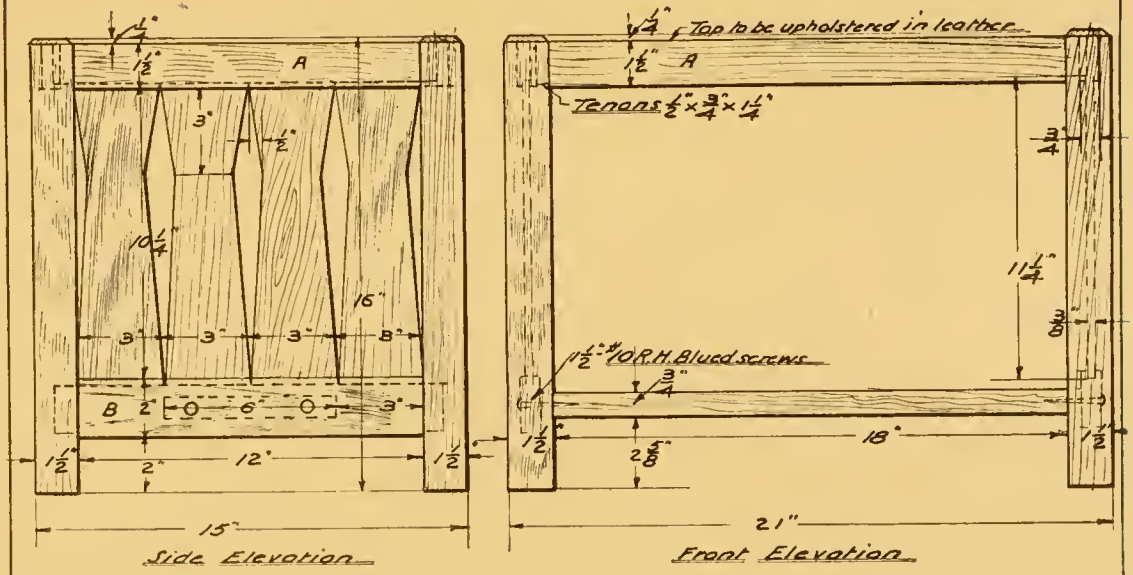
8TH Grade Model #2

Foot Stool Model #20



STEPS	TOOLS	ORDER OF EXERCISE
1. Fitting centre brace	1. Pencil, rule, knife, and dividers	1. Square and true stock.
2. Curve sawing	2. Turning saw and half-round file	2. Chamfer edges of top.
3. Beveling	3. 3-16 inch drill and bit stock	3. Lay out and cut outline of sides.
	4. Marking gauge and try-square	4. Screw on side and top braces.
	5. Cabinet scraper	5. Screw on top.
	6. Block and Jack plane	6. Sandpaper, stain, and polish.

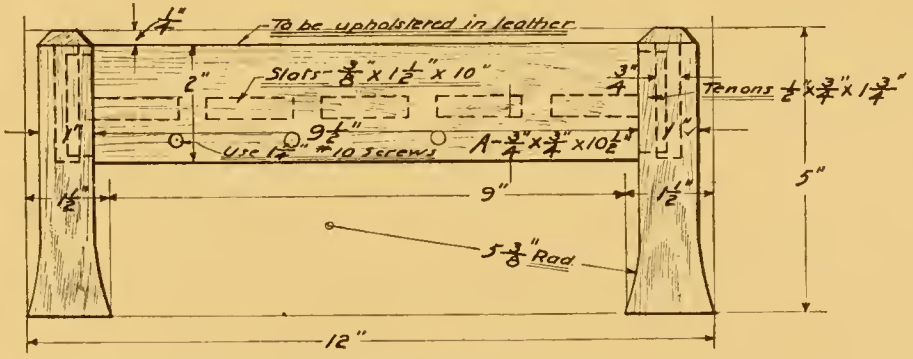
Foot Stool Model #28



STEPS	TOOLS	ORDER OF EXERCISE
1. Mortise and tenon joints 2. Grooving 3. Fitting shelf 4. Upholstering	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit and bit stock 3. 3-16 inch drill and bit gauge 4. Stanley Plow No. 45 5. Cabinet scraper and marking gauge 6. Try-square, block and Jack plane	1. Square and true stock. 2. Cut tenons on braces *A* and *B*. 3. Cut mortises for tenons in legs. 4. Plow out groove for side slats. 5. Fit together, glue, and screw in shelf. 6. Sandpaper, stain, and shellac. 7. Upholster.

8TH Grade Model #2

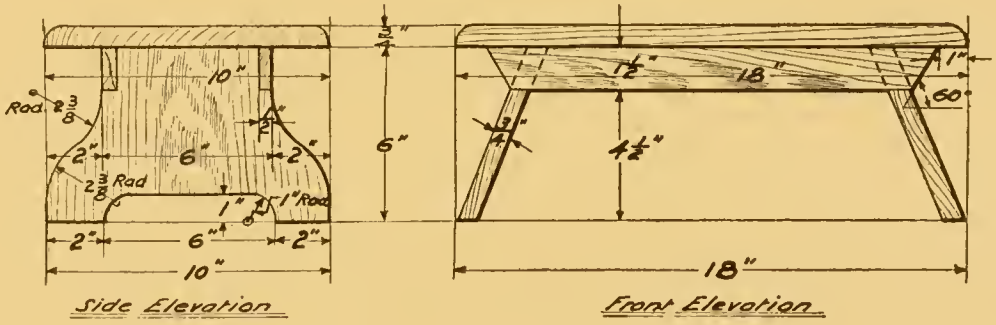
Foot Stool Model #2c



Front & Side Elevations.

STEPS	TOOLS	ORDER OF EXERCISE
1. Mortise and tenon joints 2. Upholstering	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit, bit stock and gauge 3. Turning saw and cabinet scraper 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Shape legs and cut mortises. 3. Cut tenons on braces to fit mortises. 4. Screw on slat brace *A*. 5. Glue and clamp together. 6. Scrape and sandpaper. 7. Brad in slats, stain, varnish, and upholster.

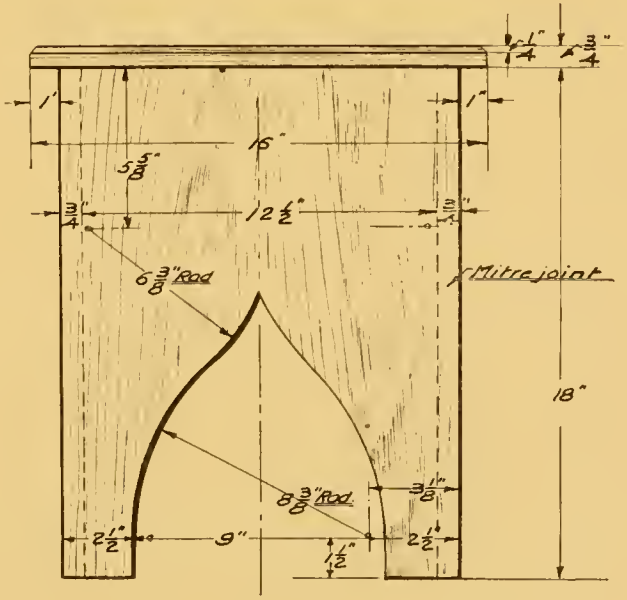
Foot Stool #2 B



STEPS	TOOLS	ORDER OF EXERCISE
1. Half-lap joints 2. Curve sawing 3. Rounding edges	1. Pencil, rule, knife, and dividers 2. Turning saw and screw-driver 3. Round cabinet scraper 4. Half-round file and 1-2 inch chisel 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Round edges of top. 3. Shape and cut sides. 4. Fit braces to sides. 5. Screw on top. 6. Scrape, sandpaper, and polish.

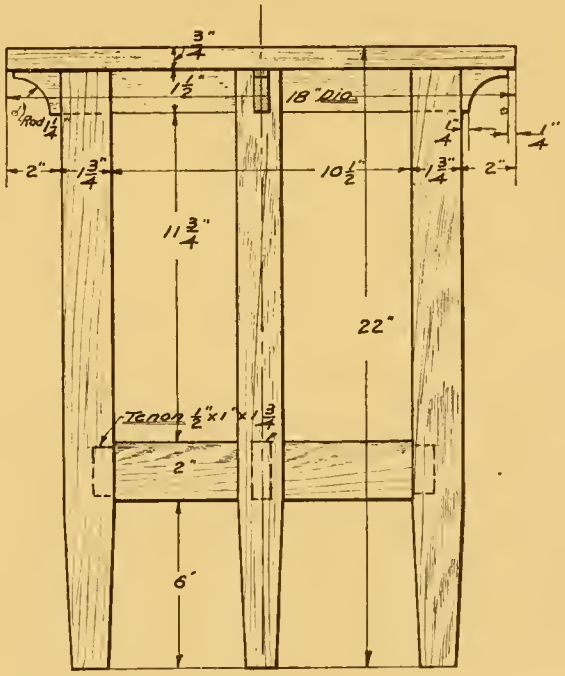
8TH Grade Model #3

Tabouret Model #3A



STEPS	TOOLS	ORDER OF EXERCISE
1. Chamfering 2. Miter jointing 3. Curve sawing	1. Pencil, rule, knife, and dividers 2. Turning saw and bevel 3. Half-round file 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Chamfer edges of top. 3. Miter edges of sides, lay out and cut curve. 4. Sandpaper and glue. 5. Stain and finish.

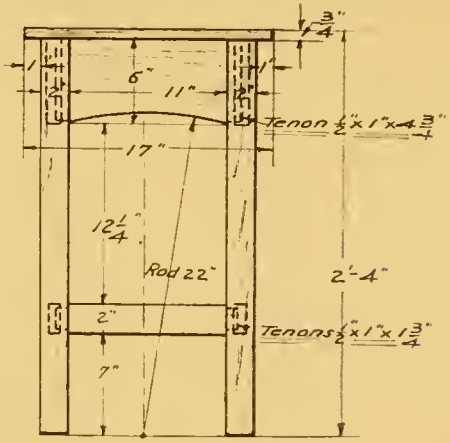
Tabouret Model #38



STEPS	TOOLS	ORDER OF EXERCISE
1. Through mortise and tenon joint 2. Chamfering legs	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit and bit stock 3. Bit gauge 4. Half-round file 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Shape legs and cut mortises. 3. Fit tenons on braces and mortises in legs. 4. Scrape, sandpaper, glue and finish.

8TH Grade Model 3

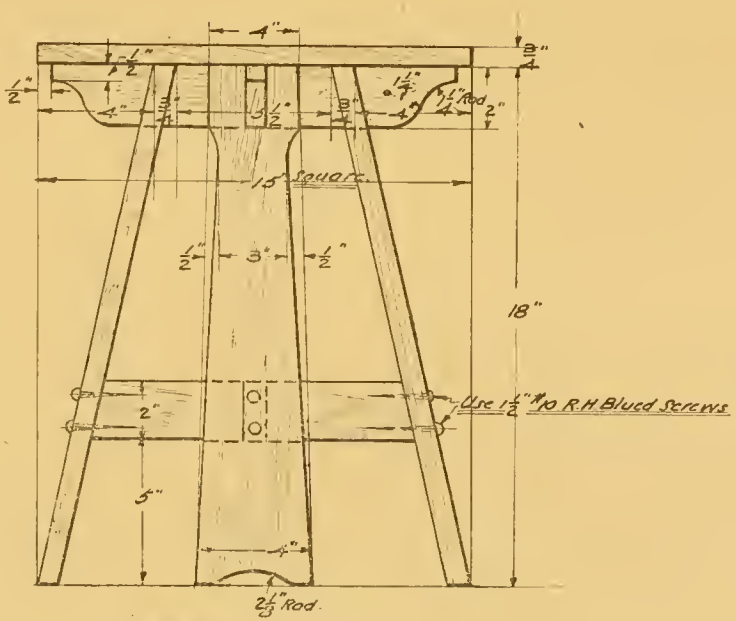
Tobouret Model # 3c



Side & Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Mortise and tenon joints 2. Curve sawing 3. Sandpapering	1. Pencil, rule, knife, and dividers 2. Turning saw and round file 3. 1-2 inch bit 4. Bit gauge and bit stock 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Lay out and cut mortises in legs. 3. Lay out and cut tenons in braces. 4. Cut curve on upper brace. 5. Sandpaper and fit together. 6. Glue, stain, and finish.

Tabouret Model # 3°

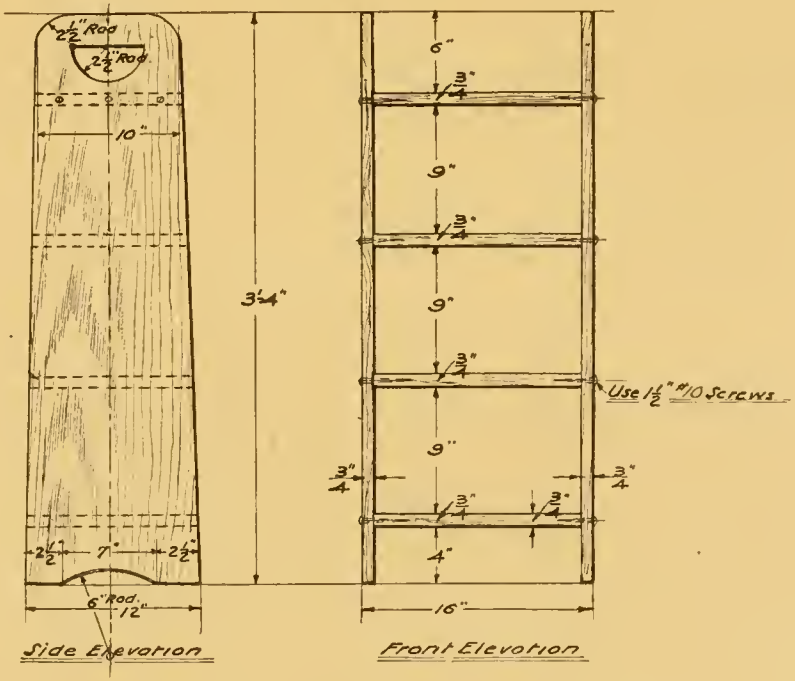


Side & Front Elevation

STEPS	TOOLS	ORDER OF EXERCISE
1. Through mortise and tenon joint 2. Curve sawing 3. Sandpapering	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit and stock 3. Turning saw and bit gauge 4. Half-round file 5. Cabinet scraper 6. Marking gauge and try-square 7. Block and Jack plane	1. Square and true stock. 2. Lay out curve and tenons in legs. 3. Fit braces to legs. 4. Sandpaper and fit together. 5. Glue, stain, and finish.

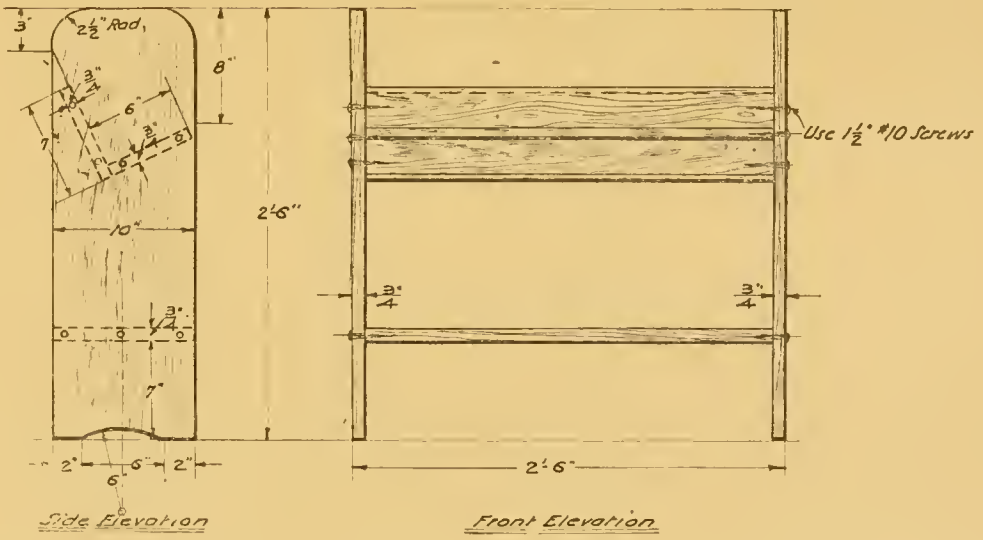
8TH Grade Model #4

Magazine Rack Model #4



STEPS	TOOLS	ORDER OF EXERCISE
1. Butt joint	1. Pencil, rule, knife, and dividers 2. 3-16 inch drill and bit stock 3. Turning saw and half-round file 4. Cabinet scraper and screw-driver 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Shape sides. 3. Screw together and scrape. 4. Sandpaper, stain, fill, and varnish.

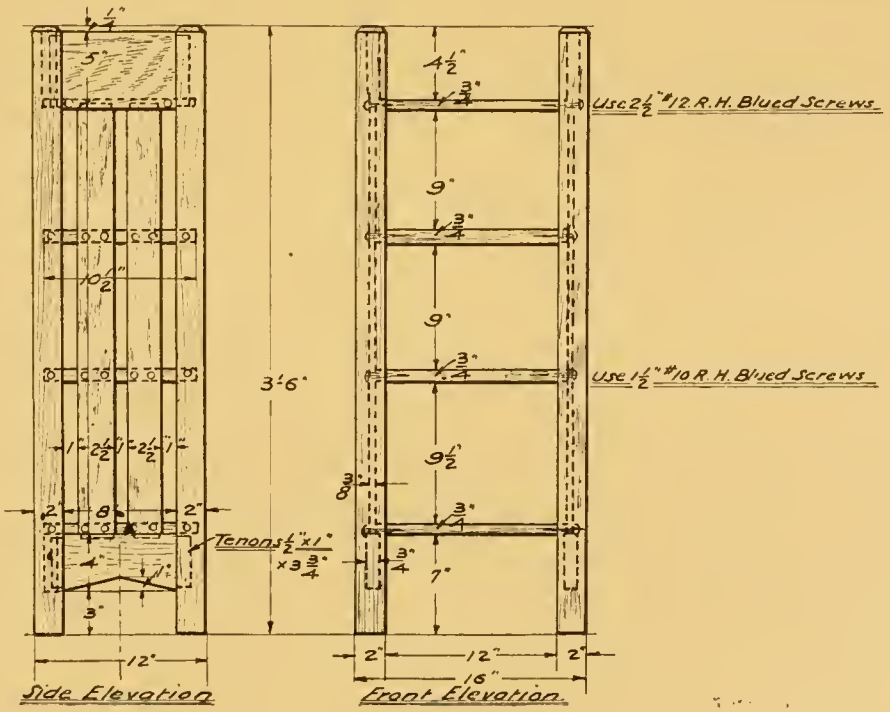
Magazine & Book Rack
Model #4B



STEPS	TOOLS	ORDER OF EXERCISE
1. Butt joint 2. Shelves at right angles	1. Pencil, rule, knife, and dividers 2. 24-inch steel square and screw-driver 3. Turning saw and file 4. Cabinet scraper 5. 3-16 inch drill and bit stock 6. Marking gauge and try-square 7. Block and Jack plane	1. Square and true stock. 2. Shape side. 3. Screw in shelves, scrape, and sandpaper. 4. Stain, varnish, and wax.

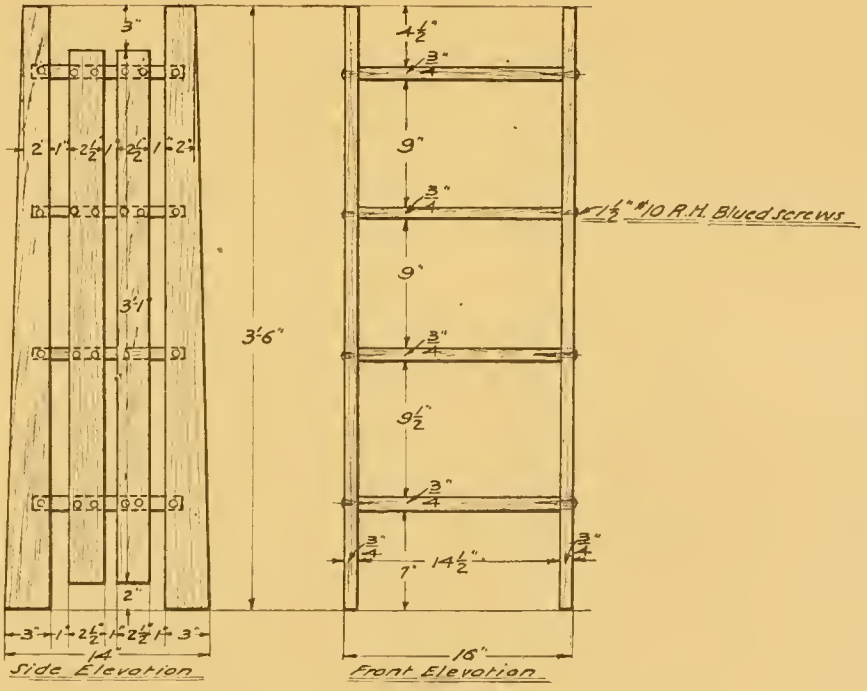
8TH Grade Model #4

Magazine Rack Model #4c



STEPS	TOOLS	ORDER OF EXERCISE
1. Mortise and tenon joints	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit and stock 3. Bit gauge and 5-16 inch drill 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Cut mortises in legs. 3. Cut mortises in braces and fit tenons. 4. Clamp together and fit shelves. 5. Sandpaper, and finish.

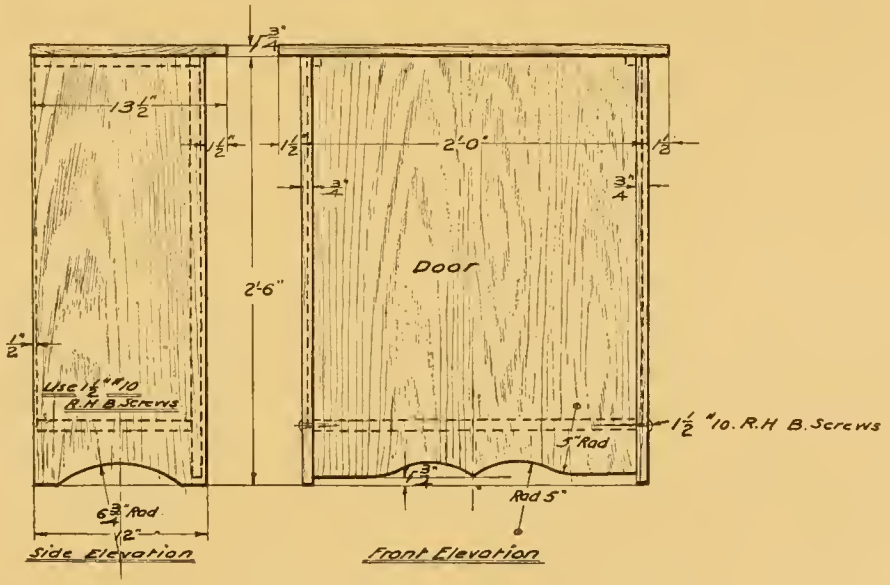
Magazine Rack Model #4D



STEPS	TOOLS	ORDER OF EXERCISE
1. Butt joint	1. Pencil, rule, knife, and dividers 2. 5-32 inch drill and bit stock 3. Cabinet scraper 4. Marking gauge and try-square 5. Block and Jack plane	1. Square and true stock. 2. Shape side pieces. 3. Screw together and scrape. 4. Sandpaper, stain, fill, and varnish.

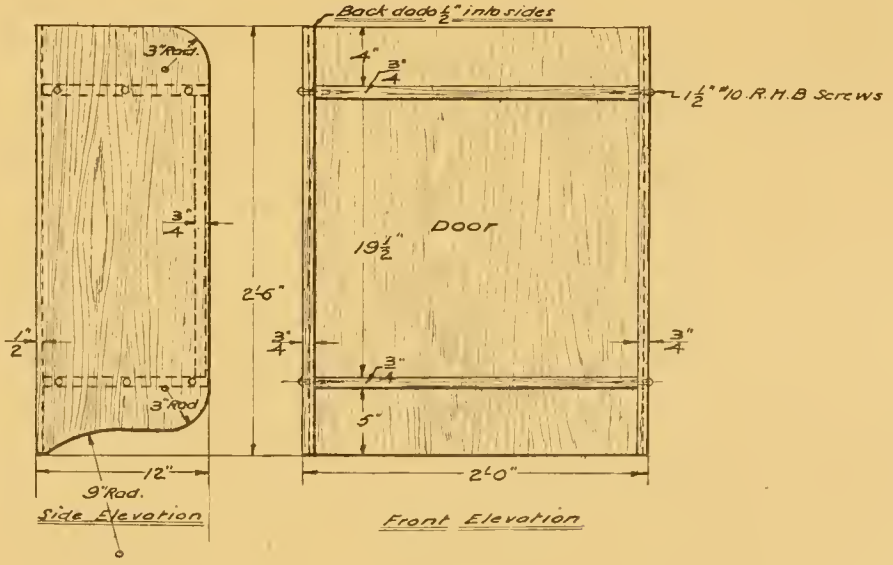
8TH Grade Model #5

Medicine Cabinet #5A



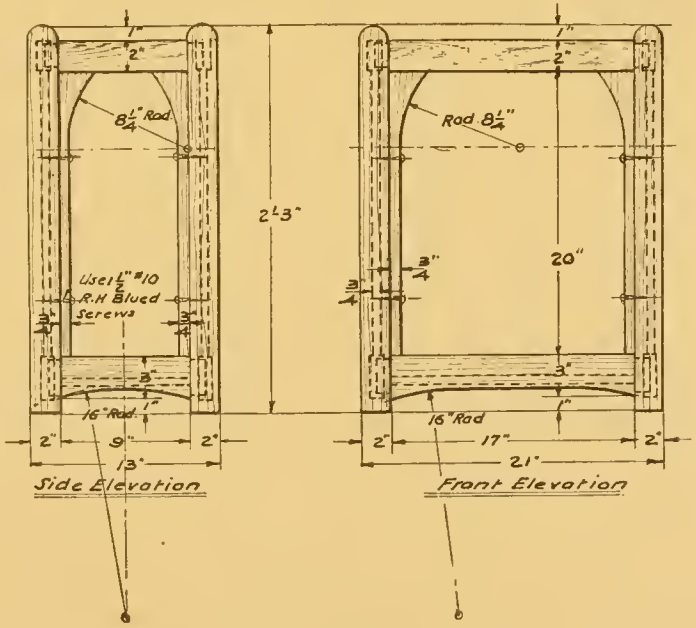
STEPS	TOOLS	ORDER OF EXERCISE
1. Dadoing for back	1. Pencil, rule, knife, and dividers	1. Square and true stock.
2. Butt joint	2. 3-16 inch drill and bit stock	2. Screw sides to shelf and top.
3. Fitting door	3. Turning saw and cabinet scraper	3. Brad in back.
	4. Half-round file and screw-driver	4. Shape and fit door:
	5. Marking gauge and try-square	5. Sandpaper, stain, and varnish.
	6. Block and Jack plane	

Medicine Cabinet Model # 5B



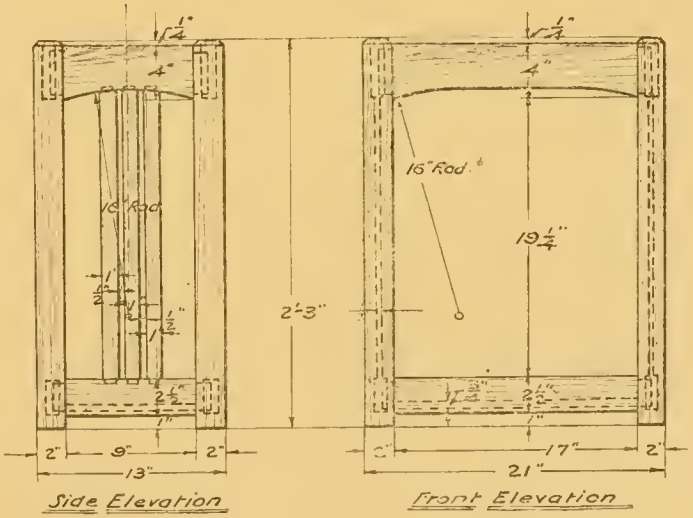
STEPS	TOOLS	ORDER OF EXERCISE
1. Dadoing for back 2. Butt joint	1. Pencil, rule, knife, and dividers 2. 3-16 inch drill and bit stock 3. Half-round file 4. Turning saw and hammer 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Shape sides. 3. Screw sides to shelves. 4. Brad in back, scrape and sandpaper. 5. Stain, fill, and varnish.

8TH Grade Model #6
Umbrella Stand #6A



STEPS	TOOLS	ORDER OF EXERCISE
1. Mortise and tenon joint 2. Butt braces	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit and stock 3. Turning saw and bit gauge 4. Half-round file and spokeshave. 5. Marking gauge and try-square 6. Block and Jack plane	1. Square and true stock. 2. Lay out and cut all mortise and tenon joints. 3. Cut out side slats. 4. Curve bottom edge of brace. 5. Glue model together and sandpaper. 6. Scrape, stain, fill, and varnish.

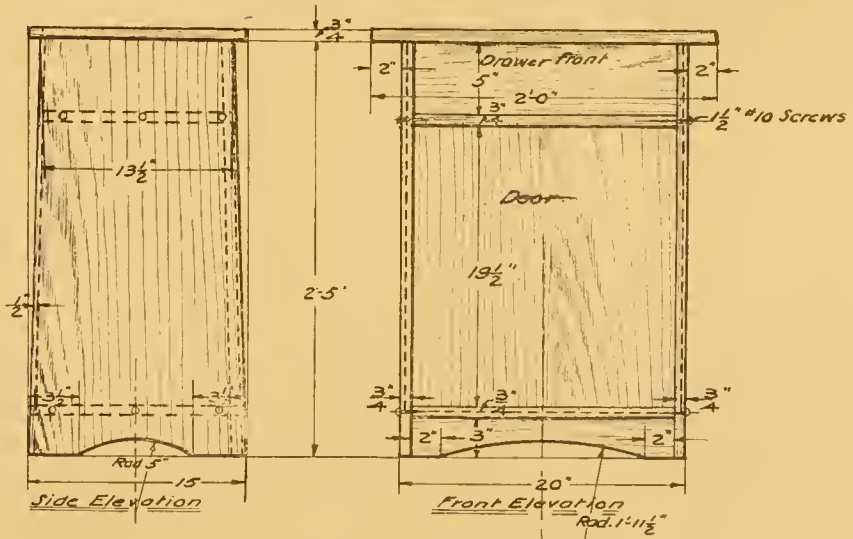
Umbrello Stand Model 6B



STEPS	TOOLS	ORDER OF EXERCISE
1. Mortise and tenon joint 2. Tenon braces.	1. Pencil, rule, knife, and dividers 2. 1-2 inch bit 3. Bit stock and gauge 4. Turning saw and spokeshave 5. Half-round file and cabinet scraper 6. Marking gauge and try-square 7. Block and Jack plane	1. Square and true stock. 2. Lay out and cut all mortises and tenons. 3. Cut out curve on upper brace. 4. Glue together, sandpaper and scrape. 5. Stain, fill, and varnish.

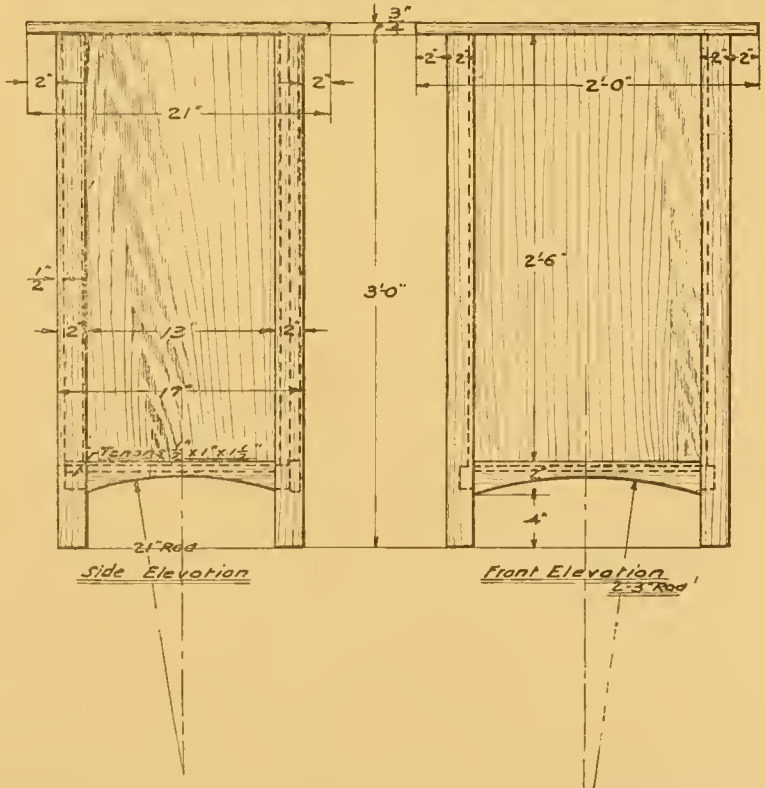
8TH Grade Model No 7

Smoker's Cabinet Model No 7A



STEPS	TOOLS	ORDER OF EXERCISE
1. Curve sawing 2. Butt joints 3. Fitting door	1. Pencil, rule, knife, and dividers 2. 3-16 inch drill and bit stock 3. Turning saw and screw-driver 4. Half-round file 5. Hammer 6. Marking gauge and try-square 7. Block and Jack plane	1. Square and true stock. 2. Screw shelves to sides. 3. Brad in back. 4. Make drawer and place in door. 5. Sandpaper and finish.

Smoker's Cabinet #7B



STEPS	TOOLS	ORDER OF EXERCISE
1. Curve sawing 2. Mortise and tenon joints 3. Fitting door	1. Pencil, rule, knife, and dividers 2. Turning saw 3. 1-2 inch bit 4. Bit gauge and stock 5. Half-round file 6. Marking gauge and try-square 7. Block and Jack plane	1. Square and true stock. 2. Lay out and cut all mortises and tenons. 3. Dado legs for side panel. 4. Assemble parts, sandpaper, stain, and varnish.

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